This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

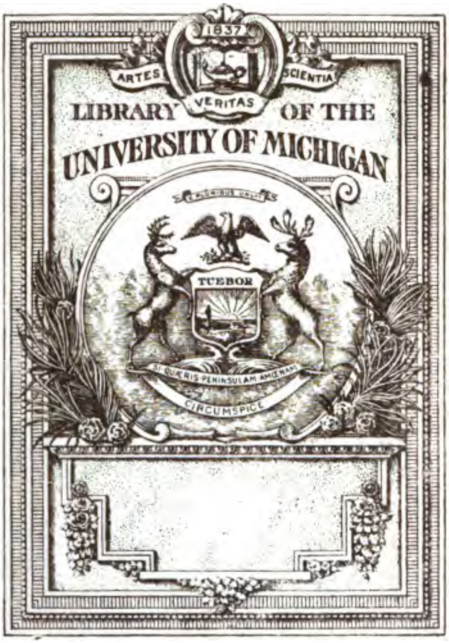
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

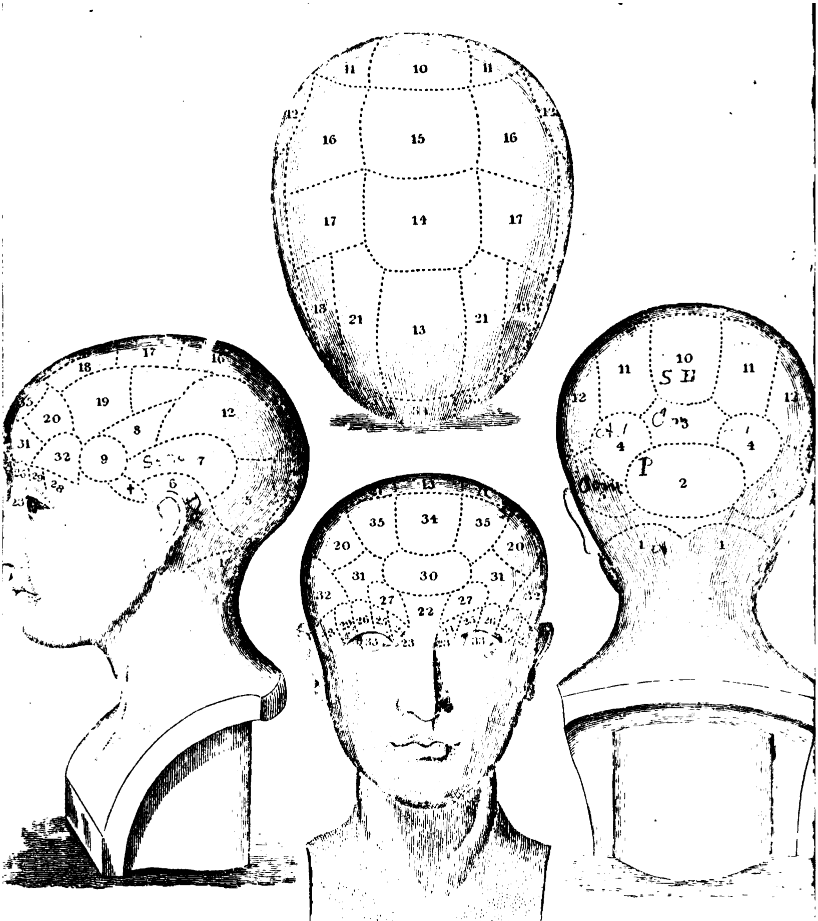
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



LIBRARY OF THE UNIVERSITY OF MICHIGAN

BF
870
.C732
1835



NAMES OF THE PHRENOLOGICAL ORGANS

REFERRING TO THE FIGURES INDICATING THEIR RELATIVE POSITIONS.

AFFECTIVE

I. PROPENSITIES

1 *Amativeness*
2 *Philoprogenitiveness*
3 *Concentrativeness*
4 *Adhesiveness*
5 *Combativeness*
6 *Destructiveness*
† *Alimentiveness*
7 *Secretiveness*
8 *Acquisitiveness*
9 *Constructiveness*

II. SENTIMENTS

10 *Self-esteem*
11 *Love of Approbation*
12 *Cautiousness*
13 *Benevolence*
14 *Veneration*
15 *Firmness*
16 *Conscientiousness*
17 *Hope*
18 *Wonder*
19 *Ideality*
Unascertained
20 *Wit or Mirthfulness*
21 *Imitation*

INTELLECTUAL

I. PERCEPTIVE

22 *Individuality*
23 *Form*
24 *Size*
25 *Weight*
26 *Colouring*
27 *Locality*
28 *Number*
29 *Order*
30 *Eventuality*
31 *Time*
32 *Tune*
33 *Language*

II. REFLEC

34 *Compari*
35 *Causalit*

Published by Marsh, Capen & Lyon, Boston, [illegible]

331-B-4
6868

ELEMENTS

OF

PHRENOLOGY.

BY GEORGE COMBE,

LATE PRESIDENT OF THE PHRENOLOGICAL SOCIETY.

FOURTH AMERICAN EDITION,

IMPROVED AND ENLARGED FROM THE THIRD EDINBURGH,
BY THE AUTHOR.

WITH ENGRAVINGS.

BOSTON:
MARSH, CAPEN & LYON.
1835.

Entered according to the Act of Congress, in the year 1834, by
MARSH, CAPEN, AND LYON,
In the Clerk's Office of the District Court of Massachusetts.

Press of John Putnam.

ADVERTISEMENT

TO THE AMERICAN EDITION.

I HAVE been requested to prepare a corrected edition of this work for the American press, and with the greatest satisfaction have complied with the solicitation. The United States stand in an enviable position, as a nation. To a territory almost boundless, a soil in the highest degree fertile, and every variety of climate, are added what no other people on earth enjoy,—a constitution entirely free, and social institutions calculated to encourage the boldest exercise of the human understanding. They require only, in addition, a sound and practical system of mental philosophy, to enable them to attain to a moral and intellectual pre-eminence commensurate with their physical and political advantages. Phrenology professes to be such a system; and as such, I present it to their consideration. The great discoverer of it has been for several years numbered with the dead; and to him alone belongs the glory of having presented this invaluable gift to mankind. His illustrious colleague died lately in the arms of American citizens.

They did honor to him, to themselves, and to their country, by their generous conduct to him while alive, and the reverence paid his memory when dead. We, who remain, profess to be only humble disciples, made wise by the wisdom of our masters, and shining with a light reflected from their brightness. In proclaiming the value and importance of their doctrines, therefore, we assume no merit to ourselves; we simply invite others to partake of a moral and intellectual banquet, which we have enjoyed with the highest relish, and found to conduce to our happiness and improvement.

The organs are delineated in the plate according to their most general appearances. There are, however, slight differences in national heads, which give rise to small variations in the lines of demarcation in the plates of different phrenologists. By appealing to nature, the student will soon learn to discriminate the positions and limits of each organ; and I recommend practice, as the best means of removing every difficulty.

My excellent and lamented friend, Dr. Spurzheim, no longer lives, to hear the expressions of my gratitude and affection. I can now only revere his memory; and in paying the highest tribute to his admirable dispositions, exalted talents, and extensive attainments, I know that I shall have the heart-felt concurrence of every American who enjoyed the pleasure of his personal acquaintance. To the best of my knowledge, there is no material point of doctrine on which we differed, except concerning the functions of the organ, No. 3. I continue to entertain the views expressed in my works in regard to it. I may now add, without indelicacy, that it was, perhaps, the only cerebral organ in which the superiority of development lay on my side, and that every one understands best the functions of those organs which are largest in his own brain. It was remarkably small in Dr. Spurzheim, and it appeared to me, that he never comprehended the effect produced by it when large. The point, however, is left open for the judgment of all inquirers.

22 *Charlotte Square,*
Edinburgh, Sept. 1833.

PREFACE TO THE FIRST EDITION.

Many persons desire to know something about Phrenology, who, nevertheless, are not prepared to bestow much, either of their time or money, in the pursuit of it. There are others, who, fully convinced of its truth and importance, wish to possess a manual, to facilitate their practice of its doctrines. The present work is intended to serve both classes, by conveying a brief, but comprehensive view of the science, at a moderate expense.

A second edition of the Essays on Phrenology will immediately be put to press, and in them a detailed exposition of the evidence, theory, and application of the system will be given. The work will consist of at least two volumes octavo, with numerous plates.

Edinburgh, July 8, 1824.

ADVERTISEMENT TO THE SECOND EDITION.

The sale of the First Edition of this work, consisting of 1500 copies, within ten months, affords evidence, that it has met with public approbation. The rapid progress of Phrenology has rendered some additions necessary. The present edition, therefore, contains the latest discoveries in the science, references to casts, which illustrate the organs, and an elucidation of some points attended with difficulty.

Edinburgh, May 7 1825.

ADVERTISEMENT TO THE THIRD EDITION.

THIS Edition is printed on a closer type than the two which have preceded it; by which means a considerable addition has been made to the matter of the work, without increasing the size or price.

Dr. SPURZHEIM, in his visit to Edinburgh, in 1828, demonstrated the anatomy of the brain, and traced out the connexion between the organs, in a manner so clear and satisfactory, that the basis of his arrangement of them appeared obviously founded in nature. In this edition I have, in consequence, adopted his classification.

In the course of numerous conversations, he kindly afforded me an opportunity of discussing with him the few points of doctrine on which we had previously differed. With the exception of Concentrativeness, on which my opinions remain unchanged. he satisfied me that he was, in other particulars, in the right; and I have adopted his views accordingly.

Dr. SPURZHEIM proposed some modifications of the lines marking out the organs on the bust; but as I have not yet had time sufficient to compare the proposed alterations with nature, I retain the old markings until further consideration.

I gratefully acknowledge the uniform kindness with which Dr. SPURZHEIM has, in every instance, met my inquiries, and the highly philosophical liberality with which he has permitted me to benefit by his discoveries.

Edinburgh, July 12, 1829.

CONTENTS.

INTRODUCTORY OBSERVATIONS. 13
- History of Discovery. 13
- The Brain the Organ of the Mind. 20
- Principles of Phrenology. 23
- Skull. 24
- Frontal Sinus. 25
- Size, *cœteris paribus*, a measure of power. . . 26
- Definition of an Organ. 30
- " of a Faculty. 31
- Organs double. 32
- How to measure their size. 32
- Circumstances which determine whether a faculty is primitive. 34

Order I.—FEELINGS. 37

Genus I.—PROPENSITIES.
- No. 1. Amativeness. 37
- 2. Philoprogenitiveness. 40
- 3. Concentrativeness. 41
- 4. Adhesiveness. 44
- 5. Combativeness. 45

6. Destructiveness. 46
Alimentiveness, or Organ of the Appetite for Food. 49
Organ of the Love of Life 50
7. Secretiveness. 51
8. Acquisitiveness. 53
9. Constructiveness. 55

Genus II.—Sentiments. 59
10. Self-Esteem. 59
11. Love of Approbation. 62
12. Cautiousness. 65
13. Benevolence. 66
14. Veneration. 69
15. Firmness. 71
16. Conscientiousness. 72
17. Hope. 76
18. Wonder. 77
19. Ideality. 79
20. Wit or Mirthfulness. 81
21. Imitation. 82

Order II.—INTELLECTUAL FACULTIES. 84
Genus I.—External Senses. 84
Feeling or Touch. 87
Taste. 88
Smell. 88
Hearing. 89
Sight. 89

Genus II.—PERCEPTIVE FACULTIES. 91
22. Individuality. 91
23. Form. 93
24. Size. 93
25. Weight or Resistance. 94
26. Coloring. 95
27. Locality. 97
28. Number. 98
29. Order. 99
30. Eventuality. 101
31. Time. 103
32. Tune. 104
33. Language. 105
Functions of Individuality distinct from those of the other Knowing Faculties. 108
Genus III.—REFLECTING FACULTIES. 111
34. Comparison. 111
35. Causality. 114
Adaptation of the External World to the Intellectual Faculties of Man. 116
Modes of Activity of the Faculties. 118
Of the Propensities and Sentiments. 118
Of the Knowing and Reflecting Faculties. . . 121
Perception. 122
Memory. 122
Conception or Imagination. 123

Judgment. 124
Attention. 125
Association. 125
Pleasure and Pain. 131
Passion. 131
Sympathy. 132
Habit. 134
Taste. 135
Effects of Size and Activity in the Organs, and practical Directions for observing Development 137
Temperaments. 139
Table of Measurement by Calippers. . . . 147
Combinations in Size. 159
Combinations in Activity. 169
On Materialism. 175
Objections to Phrenology considered. . . . 184
Different Classification of Organs. 196
Description of Craniometer. 203

ELEMENTS OF PHRENOLOGY.

INTRODUCTORY OBSERVATIONS.

Phrenology (derived from φϱην mind, and λογος discourse) treats of the faculties of the Human Mind, and of the organs by means of which they manifest themselves; but it does not enable us to predict actions.

Dr. Gall, a physician of Vienna, afterwards resident in Paris, was the founder of the system. He was born at Tiefenbrun, in Suabia, on the 9th March, 1757, and died at Paris on 22d August, 1828. From an early age he was given to observation, and was struck with the fact, that each of his brothers and sisters, companions in play, and schoolfellows, was distinguished from other individuals by some peculiarity of talent or disposition. Some of his schoolmates were characterized by the beauty of their penmanship, some by their success in arithmetic, and others by their talent for acquiring a knowledge of natural history, or languages. The compositions of one were remarkable for elegance; the style of another was stiff and dry; while a third connected his reasonings in the closest manner, and clothed his argument in the most forcible language. Their dispositions were equally different; and this diversity appeared also to determine the direction of their partialities and aversions. Not a few of them manifested a capacity for employments which they were not taught; they cut figures in wood, or delineated them on paper; some devoted their leisure to painting, or the culture of a garden; while their comrades abandoned themselves to noisy games, or traversed the woods to gather flowers, seek for bird-nests, or catch butterflies. In this manner, each individual presented a character peculiar to himself, and Dr. GALL never observed that the individual, who, in one year, had displayed selfish or knavish dispositions, became, in the next, a good and faithful friend.

The scholars with whom Dr. GALL had the greatest difficulty in competing, were those who learned by heart with great facility; and such individuals frequently gained from him, by their repetitions, the places which he had obtained by the merit of his original compositions.

Some years afterwards, having changed his place of residence, he still met individuals endowed with an equally great talent of learning to repeat. He then observed, that his schoolfellows, so gifted, possessed prominent eyes, and recollected, that his rivals in the first school had been distinguished by the same peculiarity. When he entered the University he directed his attention, from the first, to the students whose eyes were of this description, and found that they excelled in getting rapidly by heart, and giving correct recitations, although many of them were by no means distinguished in point of general talent. This observation was recognized also by the other students in the classes; and, although the connexion betwixt the talent and the external sign was not at this time established upon such complete evidence as is requisite for a philosophical conclusion, Dr. Gall could not believe that the coincidence of the two circumstances was entirely accidental. From that period, therefore, he suspected that they stood in an important relation to each other. After much reflection, he conceived, that if Memory for words was indicated by an external sign, the same might be the case with other intellectual powers; and afterwards, all individuals distinguished by any remarkable faculty became the object of his attention. By degrees, he conceived himself to have found external characteristics, which indicated a decided disposition for Painting, Music, and the Mechanical Arts. He became acquainted also with some individuals remarkable for the decision of their character, and he observed a particular part of their heads to be very largely developed. This fact first suggested to him the idea of looking to the head for signs of the Moral Sentiments. But in making these observations, he never conceived, for a moment, that the *skull* was the cause of the different talents, as has been erroneously represented; for, from the first, he referred the influence, whatever it was, to the Brain.

In following out, by observation, the principle which accident had thus suggested, he for some time encountered difficulties of the greatest magnitude. Hitherto he had been altogether ignorant of the opinions of Physiologists touching the brain, and of Metaphysicians respecting the mental faculties. He had simply observed nature. When, however, he began to en-large his knowledge of books, he found the most extraordinary conflict of opinions every where prevailing; which for a moment, made him hesitate about the correctness of his own observations. He found that the moral sentiments had, by an almost general consent, been consigned to the thoracic and abdominal viscera; and that while PYTHAGORAS, PLATO, GALEN, HALLER, and some other Physiologists, place the sentient soul or intellectual faculties in the brain, ARISTOTLE placed it in the heart, VAN HELMONT in the stomach, DES CARTES and his followers in the pineal gland, and DRELINCOURT and others in the cerebellum.

He observed also, that a great number of Philosophers and Physiologists asserted, that all men are born with equal mental faculties; and that the differences observable among them are owing either to education, or to the accidental circumstances in which they are placed. If all difference were accidental, he inferred that there could be no natural signs of predominating faculties, and consequently that the project of learning, by observation, to distinguish the functions of the different portions of the brain, must be hopeless. This difficulty he combated, by the reflection, that his brothers, sisters, and schoolfellows had all received very nearly the same education, but that he had still observed each of them unfolding a distinct character, over which circumstances appeared to exert only a limited control. He observed also, that not unfrequently those, whose education had been conducted with the greatest care, and on whom the labors of teachers had been most freely lavished, remained far behind their companions in attainments. 'Often,' says Dr. GALL, 'we were accused of want of will, or deficiency in zeal; but many of us could not, even with the most ardent desire, followed out by the most obstinate efforts, attain in some pursuits even to mediocrity; while in some other points, some of us surpassed our schoolfellows without an effort, and almost, it might be said, without perceiving it ourselves. But, in point of fact, our masters did not appear to attach much faith to the system which taught the equality of mental faculties; for they thought themselves entitled to exact more from one scholar, and less from another. They spoke frequently of natural gifts, or of the gifts of GOD, and consoled their pupils in the words of the Gospel, by assuring them that each would be required to render an account, only in proportion to the gifts which he had received.' *

Being convinced, by these facts, that there is a natural and constitutional diversity of talents and dispositions, he encountered in books still another obstacle to his success in determining the external signs of the mental powers. He found that, instead of faculties for languages, drawing, distinguishing places, music, and mechanical arts, corresponding to the different talents which he had observed in his schoolfellows, the metaphysicians spoke only of general powers, such as perception, conception, memory, imagination, and judgment; and when he endeavored to discover external signs in the head, corresponding to these general fac-

---

* Preface by Dr. GALL to the 'Anatomie, &c. du Cerveau,' from which other facts in this work are taken.

ulties, or to determine the correctness of the physiological doctrines taught by the authors already mentioned, regarding the seat of the mind, he found perplexities without end, and difficulties insurmountable.

Dr. Gall, therefore abandoning every theory and preconceived opinion, gave himself up entirely to the observation of nature. Being a friend of Dr. Nord, Physician to a Lunatic Asylum in Vienna, he had opportunities, of which he availed himself, of making observations on the insane. He visited prisons, and resorted to schools; he was introduced to the courts of Princes, to Colleges, and the seats of Justice; and wherever he heard of an individual distinguished in any particular way, either by remarkable endowment or deficiency, he observed and studied the development of his head. In this manner, by an almost imperceptible induction, he conceived himself warranted in believing, that particular mental powers are indicated by particular configurations of the head.

Hitherto he had resorted only to Physiognomical indications, as a means of discovering the functions of the brain. On reflection, however, he was convinced that Physiology is imperfect when separated from Anatomy. Having observed a woman of fifty-four years of age, who had been afflicted with hydrocephalus from her youth, and who, with a body a little shrunk, possessed a mind as active and intelligent as that of other individuals of her class, Dr. Gall declared his conviction, that the structure of the brain must be different from what was generally conceived,—a remark which Tulpius also had made, on observing a hydrocephalic patient who manifested the mental faculties. He therefore felt the necessity of making anatomical researches into the structure of the brain.

In every instance, when an individual, whose head he had observed while alive, happened to die, he used every means to be permitted to examine the brain, and frequently did so; and found, as a general fact, that, on removal of the skull, the brain, covered by the dura mater, presented a form corresponding to that which the skull had exhibited in life.

The successive steps by which Dr. Gall proceeded in his discoveries, are particularly deserving of attention. He did not, as many have imagined, first dissect the brain, and pretend by that means to discover the seats of the mental powers; neither did he, as others have conceived, first map out the skull into various compartments, and assign a faculty to each, according as his imagination led him to conceive the place appropriate to the power. On the contrary, he first observed a concomitance betwixt particular talents and dispositions, and particular forms of the head: he next ascertained, by removal of the skull, that the figure and size of the brain are indicated by these external forms; and it was only after these facts were determined, that the brain was minutely dissected, and light thrown upon its structure.

At Vienna, in 1796, Dr. Gall for the first time delivered lectures on his system.

In 1800, Dr. J. G. Spurzheim * began the study

---

* Dr. Spurzheim was born at Longuich, near Treves, on the Moselle, 31st December, 1776, and died at Boston, United States, on the 10th November, 1832.

of Phrenology under him, having in that year assisted, for the first time, at one of his lectures. In 1804 he was associated with him in his labors ; and after that period he not only added many valuable discoveries to those of Dr. GALL in the anatomy and physiology of the brain, but formed the truths, brought to light by their joint observations, into a beautiful and interesting system of mental philosophy. In Britain we are chiefly indebted to his personal exertions and printed works for a knowledge of the science.

An elementary view of the result of their labors will be found in the following work.

The mind and body are intimately connected; and it is impossible for the mind to remain unaffected in certain states of the corporeal system. But the brain, and not the whole body, is the immediate organ of mind. Common observation, and the fact that most of the older writers, SHAKSPEARE, for instance, used the terms Mind and Brain almost synonymously, authorize this conclusion. Physiologists universally treat of the brain as the material instrument on which the manifestations of mind depend. Common feeling localizes the mind in the head. The nerves which convey sensations to the mind are all intimately connected with the head. And if the brain is not the organ of mind, it remains a strange anomaly of curious and exquisite structure, carefully and admirably protected by the Creator, yet altogether without use. Nearly every other part of the body has already a known function connected with it.

The brain, then, being the organ of mind, the next inquiry is, whether it is a single part, manifesting the whole mind equally; or an aggregate of parts, each subserving a particular mental power? All the phenomena are at variance with the former, and in harmony with the latter, or phrenological view. The brain must be a combination of parts performing distinct functions: 1st, Because all the powers of the mind are not equally developed at the same time; but appear in succession at different periods of life,—just in the same way as in some animals the sense of sight appears sooner than the sense of hearing, each depending on the state of its own organ. Different parts of the brain are observed to be developed in succession, those most early developed subserving those mental powers which appear first. 2d, Because genius is generally partial. Madam CATALINI, for example, is not equally gifted with a natural talent for mathematics, or metaphysics, as for music. A man is often an excellent painter, although no musician; or a clever and acute observer, without being a profound reasoner. This is parallel to a person seeing who cannot hear, a fact explained by the organs of vision and hearing being distinct. If the same part of the brain manifested the faculty of color, of music, and of reasoning, these powers, would, of necessity, be equally strong or weak, which is contrary to daily experience. 3d, Because, in dreaming, one or more faculties are awake while others are asleep, and if all acted through the instrumentality of one and the same organ, they could not possibly be in opposite states at the same time. 4th, Because, in partial idiocy and partial insanity, some faculties are greatly deficient or diseased, while others are powerful and healthy in their operations; which could not be, if all depended on one organ. 5th, Because partial injuries of the brain do not equally affect all the mental powers; which they would do, if the organ of mind were single. Often parts of the brain are wounded without impeding the intellect, while the temper and disposition are evidently disturbed. This can arise only from different parts subserving different mental powers.

These considerations lead so irresistibly to the inference of a plurality of mental organs in the brain, that, to use FODERE's remarkable phrase, 'they had been adverted to by almost all anatomists from the days of GALEN downwards, and even by the great HALLER, *who felt a necessity* (quieprouvait *le besoin*) of assigning a distinct function to different parts of the brain.'—PINEL also broadly states the impossibility of reconciling such facts with the notion of a single organ of mind. DOLCI and other writers, acting under this conviction, attempted very early to assign functions to particular regions of the brain, which they fancied to be fit for the purpose; and a drawing of a head so divided in 1560, will be found in DOLCI's work, and in the Phrenological Journal. They failed in their attempt, in consequence of taking their own conceptions of fitness, and not actual observation, for their guide.

Dr. GALL's two fundamental propositions of the brain being the material instrument of mind, and of each of its parts being the instrument of a distinct and independent mental faculty, so far from being mere fictions of his own fancy, are thus not new, but, on the contrary, have long been entertained by the soundest medical philosophers. Their truth is borne out by universal analogy, which shows that every distinct function is connected with a distinct organ. Thus there are distinct nerves for seeing, hearing, tasting and smelling; and latterly it has been demonstrated, by BELL and MAGENDIE, that even the nerves of feeling and motion are distinct and independent, although undistinguishably blended in one common sheath in their course to the parts on which they are ramified.

Dr. GALL's method of investigation is free from certain insuperable difficulties, which have impeded the progress of other philosophers in establishing a true theory of mind.

1*st*, *Dissection* alone does not reveal the *functions* of any organ. No person, by dissecting the optic nerve, could predicate that its office is to minister to vision; or, dissecting the tongue, could discover that it is the organ of taste. Anatomists, therefore, could not, by the mere practice of their art, discover the functions of the brain.

2dly, The mind is not conscious of acting by means of organs; and hence metaphysical philosophers, who, in studying the mental phenomena, confined themselves to reflection on consciousness, could not discover the material instruments by means of which the mind performs its operations in this life, and communicates with the external world. Hence, prior to the time of Dr. GALL, ignorance of the uses of the brain was universally admitted. In proof, the writings of Dr. ROGET and Dr. THOMAS BROWN may be consulted.

Dr. GALL succeeded by comparing the size of cerebral parts with the energy of mental manifestations.

No one, however anxious, could, by feigning, write poetry, compose music, nor excel in reasoning or in mathematics, if he did not naturally possess the requisite talents. Therefore different talents may be discriminated, while the relative size of different parts of the brain also may be distinguished.

All authors agree that the brain gives the form to the skull. CUVIER, MONRO, BLUMENBACH, LAWRENCE, and many other anatomists state this.

These positions being granted, the *possibility* of GALL's discoveries becomes evident, and the question resolves itself into one of accuracy of observation, which can be determined only by actual experience.

It has been objected that the outer surface of the skull does not accurately represent the form of the inner. This objection is unfounded. After the middle period of life, the brain participates in the general decay which then begins to take place, and the inner surface of the skull sometimes follows the shrinking of the brain faster than the outer surface, and hence inequalities in thickness arise. In disease, the same thing happens. At other times, the skull becomes thinner in old age, and thus it cannot be trusted as an index of the form of the brain. In infancy, the brain and skull are imperfectly developed. For these reasons, phrenologists seek for demonstrative evidence in the observation of *healthy individuals not beyond the middle period of life.* In which circumstances, the divergence from parallelism does not exceed one-eighth of an inch, while the differences of size of brain in particular parts of heads, of otherwise equal general dimensions, extend to *one* *inch and a quarter*, as may be seen by contrasting the heads of Mr. JOSEPH HUME and Dr. CHALMERS in the region of ideality. This, therefore, allows ample scope for phrenological observation, independent of the utmost possible healthy divergence of the surfaces of the skull. In proof of the prodigious difference of size of cerebral parts, we may particularly contrast the small head of an idiot with the large head of FRANKLIN; the skull of RAPHAEL with that of a New Hollander; that of General WURMSER with that of a Hindoo,—all of which show a striking contrast in the size of particular regions of the head. To illustrate this more clearly; ANNE ORMEROD's very small organ of Tune may be compared with the large development of that of Mr. WEISS, the celebrated performer on the flute. She is insensible to music.

The frontal sinus also has been urged as an insuperable obstacle to ascertaining the size of the cerebral organs in the head, but with no success. It is an opening between the inner and outer surfaces of the frontal bone, occurring at the top of the nose. It does not in general appear over any phrenological organ before the age of twelve; but after that, it often extends along the spaces marked 22, 23, 24, 25, on the Plate; and throws a degree of uncertainty over the development of the organs indicated by these numbers. In old age and disease it frequently becomes much larger, extending over a variety of other organs; but these cases form exceptions to the general rule, and are not proper for observation. In other parts of the skull marked as pointing out the situation of organs, the outer and inner surfaces are either parallel, or the departure from perfect parallelism, where it occurs, is limited to a line, 1-10 or 1-8 of an inch according to the age and health of the individual. The difference in development between a large and a small organ of the propensities and some of the sentiments, amounts to an inch and upwards; and to a quarter of an inch in the organs of intellect, which are naturally smaller than the others. The sinus, as already mentioned, does not appear, in general, before the age of twelve, while some of the organs near it are most energetic before that age, (Individuality for instance,) and up to that time, therefore, there is no difficulty. After that age, till middle life, the sinus is common, but seldom so large as to mislead; but even then, there are cases which present a flatness or depression at the outer surface, indicating deficiency of brain behind, and a corresponding weakness of the concomitant mental power. If a sinus is present in such a case, *it must extend inward*, and make the brain *actually smaller* than phrenologists infer it to be; so that this would correspond still more strongly with the *deficiency* of mental power. The force of this negative evidence is in general altogether overlooked; but it is really strong. If a single instance could be produced of vigorous manifestation of a mental faculty the organ of which is *deficient*, I am ready to give up at once any organ so disproved. The sinus puts a *difficulty* in the way of applying phrenology to *every* individual case, but it does not establish the *impossibility* of *discovering* the function even of the organs affected by it.

The *third* fundamental principle of phrenology is, that the power of mental manifestation is invariably in proportion, *cæteris paribus*,[*] to the size of the cerebral organ. This has been assailed by wit, ridicule, and argument, but never met fairly. The indispensable condition of *all other circumstances being equal*, has been sedulously kept out of view; and Mr. Jeffrey himself has gone so far as to say that the phrenologists represent absolute size as a measure of absolute power. But the phrenological proposition is founded on nature and on reason, and is supported by universal analogy. Bones, all other conditions being the same, are strong in proportion to their size. Muscles are the same. Muscular action or motion requires a *nerve* to give the impulse, and a *muscle* to act or obey. Now a strong impulse and a moderate motor, or a weaker impulse and greater motor, may produce equal results. A moderately muscular man, under the powerful influence of rage or delirium, may show as great power of muscular action as a much more muscular man could do, when not so excited. But here the condition of *cæteris paribus* does not hold, that if we excite the latter individual equally highly, he will excel the former in exact proportion to his greater size of muscle.

In nature, this modification is beautifully exemplified. Fishes live in a medium of a specific gravity almost the same as that of their bodies. They swim naturally from their own lightness. Here, then, increased bulk does not add to their relative weight, so as to impede or injure them, and in them accordingly great muscular power is connected with very large muscles and small nerves. Birds, on the other hand, like the eagle, rise high in a medium much lighter than their own bodies; and increase of muscular size would add greatly to their own weight, and prevent them rising at all into the air; and accordingly great muscular power is conferred on them by means of very large nerves and moderately sized muscles. Still showing the proportion of power to size as a law of nature.

---

[*] [illegible]

In conformity with the same principle, **Desmoulins** states, that the nerves of *sensation* going to the arm and hand (the chief instruments of touch,) are in man five times greater in volume and surface than those going to the *muscles*. Whereas, in the horse and other animals with imperfect touch, and great muscular strength, the proportions are so completely reversed that the mass of the muscular nerves exceeds that of the sensitive nerves by one third. Again; in the case of the five senses, properly so called, the size of the nerves is always proportioned, *cæteris paribus*, to the intensity of the function. **Monro**, **Blumenbach**, **Cuvier** and **Magendie** state this proportion. In fishes, **Desmoulins** found the auditory nerve twenty times larger in proportion to the size of the animal than in mammalia and birds—water being less fit than air for transmission of sound. Those animals which enjoy an acute sense of smell are always remarkable for great size of olfactory nerves. For instance, the bear, the sheep, the dog, and the cow, have an immense surface covered with nervous fibrils. In like manner, large nerves of taste uniformly attend superiority in that function. And in vision the same proportion between size of organ and intensity of function is most remarkably displayed. In eagles, whose sight is very keen, the ganglions, whence the optic nerves arise, are equal in size to one-third of the whole brain; whereas, in the owl, which sees imperfectly, they are not equal to more than one-twentieth. In birds of prey, the nervous expansion of the retina in the eye is curiously folded and doubled upon itself, for the sole purpose of affording room for a large nerve in a small space, and these folds disappear, when these birds are confined for a length of time to near vision, as in a cage; thus demonstrating the connexion of size of organ and power of function.

The brain forms no exception to this law; and most physiologists admit that the mental manifestations are vigorous in proportion to its size, all other things being equal. CUVIER and MAGENDIE are no mean authorities. In speaking of the cerebral lobes being the place 'where all the sensations take a distinct form, and leave durable impressions,' CUVIER adds, that 'comparative anatomy offers another confirmation of the *constant proportion between the size of these lobes and the degree of intelligence of animals*,' thus admitting the influence of size of the cerebral organs as distinctly as Dr. GALL himself. And it may further be remarked, that, in this instance, CUVIER speaks the sentiments of PORTAL, BERTHOLLET, PINEL, and DUMERIL, who, along with himself, formed a commission, in 1822, to examine and report upon the experiments of FLOURENS. In fact, all former attempts to discover the uses of the brain assume this principle as self-evident. CAMPER's facial angle was invented to show, that the nearer the angle approaches to a right angle, or, in other words, the *larger and more prominent the forehead*, the greater will be the intellectual powers. The method founded on comparing the absolute size of the brain in different animals as an index of their capacities, rests on the same assumption. Those inquirers also, who estimated the size of the brain relatively to the mass of the nerves, and relatively to the size of the spinal marrow, and relatively to the size of the cerebellum, all proceeded on the principle that the energy of function was uniformly proportioned, *cæteris paribus*,* to size of organ.

The principle of size being a measure of power, which is thus almost universally admitted in regard to the whole brain, is equally accurate when applied to its component parts; at least, the truth of it is a fair and reasonable subject of philosophical inquiry; and, on the information obtained by observation, the phrenologists rest their whole system.

The phrenologist, therefore, compares cerebral development with the manifestations of mental power, for the purpose of discovering the functions of the brain, and the organs of the mind; and this method of investigation is conformable to the principles of the inductive philosophy, and free from the objections attending the anatomical and metaphysical modes of research.

A mental organ is a material instrument, by means of which the mind, in this life, enters into particular states, active and passive.

The mind is regarded as simple, and its substance or essence is unknown. It is furnished, by nature, with highly interesting susceptibilities, and a vast apparatus of mental organs, for enabling it to manifest its energies, and enter into different states.

Thus, when aided by optic and auditory nerves, the mind sees and hears; when assisted by an organ of Cautiousness, it feels fear; by an organ of Causality, it reasons. Its power of seeing depends on the perfection of the optic nerves; and, in like manner, its power of experiencing the emotion of beauty is in proportion to the perfection of the organ of Ideality. The optic nerve, when stimulated by light, induces the active state, called Seeing, in the mind; and the organ of Benevolence, excited by an object in distress, produces the mental state called Compassion.

States of mind are either simple or complex. A simple state results from the action of a single organ on the mind: Seeing is a simple state arising from the activity of the optic nerves. Complex states are produced when the mind is acted upon by several organs at the same time. Thus, suppose that an insult is offered to an individual in an august assembly, Self-Esteem will produce the feeling of offended dignity; and Destructiveness will give the desire of revenge; Veneration, however, may call up the emotion of respect or awe for the personages present, while Cautiousness and Love of Approbation may give rise to the fear of offending them; all which contending emotions may coexist. Hence, the mind, simple in itself, may, by means of a plurality of organs, exist in a state of complex relation to other objects. *

The term Faculty is retained as a convenient expression for the particular state into which the mind

---

* This doctrine was first clearly elucidated by the Rev. David Welsh, in his excellent Life of the late Dr. Thomas Brown, Note N. p. 519.

enters, when influenced by particular organs. It is applied to the feelings as well as to the intellect: thus, the faculty of Benevolence means every mode of benevolent feeling induced by means of the organ of Benevolence.

The following points are conceived to be establishlished by an extensive induction of facts.

1*st*, The mind manifests a plurality of faculties.

2*dly*, The brain is the material instrument by means of which the mind acts, and is acted upon; and it is a congeries of organs.

3*dly*, The brain consists of two hemispheres, separated by a strong membrane, called the Falciform process of the dura mater. Each hemisphere is an aggregate of parts, and each part serves to manifest a particular mental faculty. The two hemispheres, without being absolutely symmetrical, in general correspond in form and functions; and hence there are two organs for each faculty, one situate in each hemisphere. The cerebellum in man is situate below the brain. A thick membrane, named the Tentorium, separates the two; but they are both connected with the medulla oblongata, and through it with each other.

Each organ is understood to extend from the medulla oblongata, or top of the spinal marrow, to the surface of the brain or cerebellum; and every individual possesses all the organs in a greater or less degree.

4*thly*, The power with which each faculty is capable of manifesting itself (other conditions being equal,) bears a proportion to the size of its organs. Power and activity are distinguishable. Size appears to be essential to power; for a very energetic mind and a very small brain are never found concomitant. An error is frequently committed in supposing that absolute size, or size independent of health, constitution, and exercise, is a measure of power; but phrenologists do not hold this doctrine. Further details will be entered into in a subsequent part of the work.

The *size* of an organ is estimated by its length and its breadth. Its length is measured by the distance from the *medulla oblongata*, or top of the spinal marrow, to the outer surface of the brain. A line drawn through the head, from the opening of one ear to that of the other, would, in the middle, pass close to, but a little before, the medulla oblongata; hence the length of an organ is measured from the line of the ear to the circumference. Its breadth is indicated by its expansion at the surface. The student should observe the *size*, and not the mere *prominence* of the organs. An organ may be likened to an inverted cone, with its apex in the medulla, and its base at the surface of the brain: the broader the base and longer the distance betwixt it and the apex, the greater will be the size, or the quantity of matter which it will contain. I do not say that the organs may be seen lying separately like so many cones. This is a mere illustration of the mode in which their size is to be estimated. Their peripheral expansion, and also the medulla oblongata may be estimated by touch and sight.

There are parts at the base of the brain, in the middle and posterior regions, the size of which cannot be discovered during life, and whose functions, in consequence, are still unknown. From analogy, and some pathological facts, they are supposed to be the organs of the sensations of hunger and thirst, heat and cold, and of some other mental affections, for which cerebral organs have not been discovered; but, demonstrative evidence to this effect being wanted, this conjecture is merely stated to incite to farther investigation.

The Phrenologists consider Man by himself, and also compare him with other animals. When the lower animals manifest the same propensities and feelings as those displayed by man, the faculties which produce them are held to be common to both. A faculty is admitted to be primitive,—

1. Which exists in one kind of animals, and not in another;

2. Which varies in the two sexes of the same species;

3. Which is proportionate to the other faculties of the same individual;

4. Which does not manifest itself simultaneously with the other faculties; that is, which appears and disappears earlier or later in life than other faculties;

5. Which may act or rest singly;

6. Which is propagated in a distinct manner from parents to children; and,

7. Which may singly preserve its proper state of health or disease.

The history of the discovery of each faculty and its organs is stated in Dr. GALL's 4to work in 4 vols., entitled 'Physiologie du Cerveau,' and some of the *evidence* on which each is admitted is also there brought forward. Dr. SPURZHEIM's work, entitled, 'The New Physiognomical System,' also contains many facts; and more cases will be found in the Transactions of the Phrenological Society, and in the Phrenological Journal. It is impossible to repeat these in so limited a work as the present. The reader is therefore respectfully informed, that I do not here state the evidence on which Phrenology is founded: I beg to refer him to the sources of information now alluded to, and to NATURE, which is always within his reach; for self-conviction can be obtained only by self-observation.

When the two organs of a faculty are situated immediately on the sides of the middle line separating the hemispheres, they are included in one space on the busts and plates. To save circumlocution, the expression '*organ*' of a faculty will be frequently used, but both organs are thereby meant.

ORDER I.—FEELINGS.

Genus I.—PROPENSITIES.

THE faculties falling under this genus do not form ideas; their sole function is to produce a propensity of a specific kind. These faculties are common to Man with Animals.

1. AMATIVENESS.

THE cerebellum is the organ of this propensity; it is situated between and below the mastoid process on each side, and the projecting point in the middle of the transverse ridge of the occipital bone. It is separated from the brain by a strong membrane, called the Tentorium; but it is connected with the medulla oblongata, from which the brain arises. There is nearly half an inch of space between the cerebellum and the brain, at the line of insertion of the tentorium into the skull. The size of the cerebellum is indicated, during life, by the thickness of the neck at these parts,—or by the lobes of the cerebellum projecting downwards, which may be felt by pressing the hand against the muscles of the neck. The cast of the skull of Raphael, affords an example of the latter form. The faculty give rise to the sexual feeling. In new-born children, the cerebellum is the least developed of all the cerebral parts. It is to the brain as one to thirteen or fifteen, and in adults as one to six, seven, or eight. It attains its full size from eighteen to twenty-six. In females, in general, it is less in proportion to the brain than in males; but in some females it may be found larger in proportion to the brain than in males in general. In old age it frequently diminishes. There is no constant proportion betwixt the brain and the cerebellum in all individuals, just as there is no invariable proportion betwixt the feeling and the other powers of the mind. Sometimes, however, the cerebellum is largely developed before the age of puberty. This was the case in a child of three years of age, in a boy of five, and in one of twelve; and they all manifested the feeling strongly. In the cast of the skull of Dr. HETTE, sold in the shops, the development is small, and the feeling corresponded. In the casts of MITCHELL, DEAN, and RAPHAEL, it is very large, and the manifestations were in proportion. Farther evidence of the functions of this organ will be found in Dr. GALL's 'Physiologie du Cerveau;' and several cases are mentioned in the following works, viz. 'Journal of Pathological Observations, kept at the Hospital of the E'cole de Médécine, No. 108, 15th July, 1817,' case of *Jean Michel Brigaud;* 'Journal of the Hôtel Dieu,' case of *Florat*, 19th March, 1819, and of a woman, 11th November, 1818; 'WEPFERUS, Historiæ apoplecticorum,' edit. 1724, page 487; 'Philosophical Transactions,' No. 228, case by Dr.

TYSON; 'Mémoires de Chirurgie Militaire, et Campagnes,' by Baron LARREY, vol. iii. p. 262, vol. ii. p. 150; 'SERRES on Apoplexy; 'RICHERAND's Elements of Physiology,' pp. 379, 380; 'KERRISON's Translation.'

M. FLOURENS, a physiologist of Paris, has lately inflicted injuries on the cerebella of the lower animals, and contends, that these experiments show that this organ serves for the regulation of muscular motion. 'On removing the cerebellum,' says he, 'the animal loses the power of executing combined movements.' MAGENDIE performed similar experiments on the cerebellum, and found that they only occasion an *irresistible tendency in the animal to run, walk, or swim, backwards.* He performed experiments, also, on the *corpora striata* and *tubercula quadrigemina*, with the following results: when one part of these was cut, the animal *rolled;* when another, *it went forward, and extended its head and extremities;* when another, it *bent all these:* so that, according to this mode of determining the cerebral functions, these parts of the brain possess an equal claim with the cerebellum, to be regarded as the regulators of motion. The fact is, that all parts of the nervous system are so intimately connected, that the infliction of injuries is not the way to determine the function of any, even its least important parts. As, however, the cerebellum consists of a middle and two lateral portions, it may not be a single organ; and it is possible that Amativeness may be connected with one part, and voluntary motion with other parts. That Amativeness is its chief function, is held to be certain.

2. PHILOPROGENITIVENESS.

A STRONG membrane, called the Tentorium, separates the cerebellum from the brain. The organ of Philoprogenitiveness is situated immediately above the middle part of the cerebellum, and corresponds to the protuberance of the occiput; but a space of nearly half an inch on the skull intervenes between the cerebellum and this organ, which is occupied by the attachment of the tentorium to the skull, and by the transverse sinus. It is generally larger, in proportion to the other organs, in females than in males. When it is large, and No. 1 moderate, it gives a drooping appearance to the hind part of the head.

The chief function of the faculty is to produce the instinctive love of offspring in general. This feeling is distinct from benevolence; for we frequently find it strong in selfish individuals, who manifest no compassionate feeling towards adults. It is equally distinct from self-love; for sometimes the most generous are passionately fond of children, and occasionally the most selfish are indifferent about them. It chiefly supports the mother in her toils, and renders even delightful the cares and troubles of rearing a helpless offspring.

The natural language of the faculty is soft, tender, and sympathetic; and when the feeling is strong, the individual is delighted at the sight of children, who, on the other hand, are instinctively captivated by its natural expression, and flock around him when he makes his appearance. It is large in the Hindoo, Negro, Esquimaux, Ceylonese, and Charib skulls.—Established.

3. CONCENTRATIVENESS.

The organ is situated immediately above Philoprogenitiveness, and below Self-Esteem.

Observation proves that this is a distinct organ, because it is sometimes large, when the organs of Philoprogenitiveness and Self-Esteem, lying below and above it, are small, and sometimes small when these are large. Dr. SPURZHEIM observed it to be large in those animals and persons who seemed attached to particular places; and he thence termed it the organ of *Inhabitiveness*. The function, however, is stated by him to be only conjectural. From more enlarged observations, it now seems probable that its function is to maintain two or more powers in simultaneous and combined activity, so that they may be directed towards one object; and it is, in consequence, named Concentrativeness.

The first step in the discovery of this last function was the observation, that certain individuals are naturally prone to sedentary habits, and find it painful to stir abroad, without a special motive, and this, too, of considerable urgency. Other persons experience equal difficulty in settling; their strongest desire is to engage in some active employment, in which their attention shall be carried, as it were, out of themselves, and occupied with external objects and occurrences. The former were perceived to possess this organ large, the latter small. Some patients, afflicted with nervous debility, feel extreme aversion to active pursuits, in whom the organ may be found small; but these are cases of disease, and the observations now alluded to were made on individuals in the vigor of life and health.

The next step was the observation, that some persons possess a natural facility of concentrating their feelings and thoughts, without the tendency to be distracted by the intrusion of emotions or ideas foreign to the main point under consideration. Such persons possess a command over their feelings and intellectual powers, so as to be able to direct them, in their whole vigor, to the pursuit which forms the objects of their study for the time; and hence they produce the greatest possible results from the particular endowments which nature has bestowed on them. Other individuals, on the other hand, have been observed, whose feelings do not act in combination, who find their thoughts lost in dissipation, who are unable to keep the leading idea in its situation of becoming prominence; are distracted by accessories; and, in short, experience great difficulty in combining their whole powers to a single object. These persons, even with considerable reflecting talents, fail to produce a corresponding general effect, and their mental productions are characterized by the intrusion of irrelevant emotions and ideas, and the unperceived omission of others that are important, arising from the disjoined action of their several faculties. The organ was perceived to be large in the former, and small in the latter.

Probably it is by the exercise of a power resembling Concentrativeness, that animals, such as the chamois, who are fond of heights, are enabled to maintain in action all those faculties which are necessary to preserve their position while they browse in difficult or dangerous situations, and at the same time avoid the aim of the hunter. There appears, therefore, to be nothing in the limited observations of Dr. SPURZHEIM, inconsistent with the more extensive views now taken of the functions of this faculty. Concentrativeness, however, is stated as only probable; and the function is open to elucidation from farther observations.

It has been objected, that concentration of mind is an intellectual operation, and that the organ No. 3, is situated between the propensities and sentiments. I doubt, however, if concentration be of an intellectual nature. All the Intellectual faculties perceive objects or relations existing independent of the mind; but Concentrativeness has no external objects or relation. Its whole influence and sphere of activity, like those of Firmness and Self-Esteem, near which it is placed, arise and terminate in the mind itself. This is characteristic of a sentiment, and not of an intellectual power. Farther, Concentrativeness combines the *feelings*, and directs them in a concentrated effort, as much as it does the Intellectual faculties. The Author of Waverley speaks of 'concentrated grief;' and it is sense to speak of 'concentrated selfishness,' or 'concentrated affection;' these effects arising from this organ, combined with Cautiousness, Self-Esteem, Adhesiveness or Acquisitiveness. The organ is small in the American Indians, and larger in Negroes and Europeans. A convolution of the brain, lying above the corpus callosum, extends from the bottom of this organ to the organs of the Intellectual faculties, which convolution is in communication also with Self-Esteem, and several organs of the Sentiments.

4

4. ADHESIVENESS.

This organ is situated on each side of Concentrativeness, higher up than Philoprogenitiveness, and just above the lambdoidal suture.

The faculty produces the instinctive tendency to attach one's self to surrounding objects, animate and inanimate. Those persons in whom it is very strong feel an involuntary impulse to embrace and cling to the object of their affections. It disposes to friendship and society in general, and gives ardor to the shake of the hand. In boys, it frequently indicates itself by attachment to dogs, horses, rabbits, birds, and other animals. In girls, it shows itself by affectionate embraces of the doll. It is stronger, and the organ is larger, in women than in men. When too strong, excessive regret at the loss of a friend, or excessive uneasiness at leaving one's country, or the disease called Nostalgia, is the result. When feeble, indifference to others is the consequence, which may render a man an anchorite or hermit. The organ is large in Mrs. H. and MARY MACINNES.—Established.

5. COMBATIVENESS.

THE organ is situated at the inferior and posterior or mastoid angle of the parietal bone.

The faculty produces active courage, and, when energetic, the propensity to attack. A considerable endowment is indispensable to all great and magnanimous characters. It gives that boldness to the mind, which enables it to look undaunted on opposition; also, to meet, and, if possible, to overcome it. When very deficient, the individual cannot resist attacks, and is incapable of making his way where he must invade the prejudices or encounter the hostility of others. When too energetic, it inspires with the love of contention for its own sake; leads to a fiery and quarrelsome disposition; and pleasure may then be felt in disputation or in fighting.

Dr. REID and Mr. STEWART admit this propensity under the name of Sudden Resentment; and Dr. THOMAS BROWN speaks of a principle which gives us 'additional vigor, when assailed, and which, from the certainty of this additional vigor of resistance, renders attack formidable to the assailant.' And, again, 'There is,' says he, 'a principle in our mind, which is to us like a constant protector, which may slumber, indeed, but which slumbers only at seasons when its vigilance would be useless; which awakes, therefore, at the first appearance of unjust intention, and which becomes *more* watchful and *more* vigorous in proportion to the violence of the attack which it has to dread.'—Vol. iii. p. 324. 'Courage,' says Dr. JOHNSON, 'is a quality so necessary for maintaining virtue, that it is always respected, even when it is associated with vice.' The chief difference between these and the Phrenological views is, that we regard the propensity as an active impulse, exerting an habitual influence on the mind; inspiring it, when the organ is large, with constitutional boldness, and prompting it to seek opportunities and situations in which the faculty may exercise itself; and, when the organ is small, occasioning a characteristic timidity and deficiency of spirit for active enterprize.

The organ is generally large in persons who have murdered from the impulse of the moment. It is large in the Charibs, King ROBERT BRUCE, General WURMSER, DAVID HAGGART, MAXWELL; moderate in Rev. Mr. M., and small in most of the Hindoos and Ceylonese.—Established.

6. DESTRUCTIVENESS.

THE organ is situated immediately above, and extends a little backwards and forwards from the external opening of the ear, and corresponds to the squamous plate of the temporal bone. In Dr. GALL's plates, it extends a few lines farther back than in Dr. SPURZ-

HEIM's. I have seen cases in nature corresponding to both, there being slight variations in the situations of the cerebral organs, as in the distribution of the blood-vessels, nerves, &c. in different individuals. A difference in the skulls of carnivorous and herbivorous animals, first suggested the existence of the organ.

If we place the skull of any carnivorous animal horizontally, and trace a vertical line through the external opening of the ear, a great portion of the cerebral mass is situated above and behind that line; and the more an animal is carnivorous, the larger is the quantity of brain there situated.

The faculty produces the impulse, attended with desire, to destroy in general. Combativeness gives the desire to meet and overcome obstacles; but having vanquished them, the mind, under its inspiration, pursues them no farther. Destructiveness prompts us to exterminate them, so that they may never rise up to occasion fresh embarrassment. When energetic, it gives a keen and impatient tone to the mind, and adds force, in certain circumstances, to character. Anger and rage are manifestations of it; which, being analyzed, are threats of unpleasant consequences, or vengeance to those who transgress our commands, or encroach on our rights. Hence it gives weight to injunction, by inspiring with dread of suffering in case of disobedience. It is essential to satire; and inspires authors who write cuttingly, with the talent of lacerating the feelings of their opponents. When very deficient, there is a lack of fire in the constitution; the mind, as it were, wants edge, and the individual is prone to sink into passive indolence. He feels, too, and others likewise discover, that his resentment wants force, that it is feeble and impotent; and the wicked set him at defiance, or subject him with impunity to abuse. Cruelty is the result of its excessive energy, uncontrolled by Benevolence and Justice. The organ is conspicuous in the heads of cool and deliberate murderers, and in persons habitually delighting in cruelty. Cursing is the outward expression of its fierce activity, and is another form of its abuse.

Metaphysical authors, in general, take no notice of any such propensity as this. Lord KAIMES, who has been censured by Mr. STEWART, for admitting, unnecessarily, too many instinctive principles, observes that 'there is a contrivance of Nature, no less simple than effectual, which engages men to bear with cheerfulness the fatigues of hunting, and the uncertainty of capture; and that is *an appetite for hunting.*'—It is an illustrious instance of providential care, the adapting the internal constitution of man to his external circumstances. The appetite for hunting, though among us little necessary for food, is to this day remarkable in young men, high and low, rich and poor. Natural propensities may be rendered faint or obscure, but never are totally eradicated.—*Sketches*, B. i. In point of fact, I have found the organ large in keen sportsmen, without exception. It is also generally large in those who are fond of seeing public executions, floggings, and the infliction of pain in all its forms. When very powerful, but combined with the higher sentiments equally vigorous, it renders the destruction of inanimate objects a delightful occupation. The organ is large in the busts of DEAN, MITCHELL,

Pallet, **Thurtell**, **Heaman**, and in the skulls of **Bruce**, **Gordon**, **Hussey**, **Nisbet**, **Bellingham**, **Buchanan**, **Rotherham**, **Albert**; and small or moderate in many of the Hindoos.—Established.

ALIMENTIVENESS, OR ORGAN OF THE APPETITE FOR FOOD.

Established by J. [illegible]

In the sheep, the olfactory nerves, which are very large, are perceived to terminate in two cerebral convolutions, lying at the base of the middle lobe of the brain, adjoining and immediately below the situation occupied by the organs of Destructiveness in carnivorous animals. The sheep is guided in the selection of its food by the sense of smell; and, for several years, I suggested, in my Lectures on Phrenology, the inference as probable, that these parts may be the organs of the instinct which prompts that animal to take nourishment. Mr. **Crook** mentioned the same idea to Dr. **Spurzheim**, and Dr. **Hoppe** of Copenhagen has published two valuable communications on the subject, in the Phrenological Journal. 'I have been led,' says Dr. **Hoppe**, 'to think that the place where the different degrees of development of the organ for taking nourishment are manifested in the living body, in man, is in the *fossa zygomatica*, exactly under the organ of Acquisitiveness, and before that of Destructiveness,' p. 115. When the organ is large, the head is broad at this part, but which must not be confounded with high cheek-bones. The temporal muscle covers the organ,

and allowance ought to be made for its thickness. The organ is considered as only probable: its place is marked, but it is not numbered, in the Plate. [illegible]

ORGAN OF THE LOVE OF LIFE.

[illegible]

DIFFERENT individuals possess the love of life in very different degrees. In some it is so strong, that they view death as the greatest calamity; and the idea of annihilation is absolutely insupportable to their imaginations. Other persons again are more indifferent about life, and do not regard its termination as a formidable evil: so far as the mere pleasure of living is concerned, they are ready to surrender it with scarcely a feeling of regret. I have found these feelings combined with the most opposite dispositions and external circumstances. The ardent lovers of life were not always the healthy, the gay, and the unfortunate; nor those who were comparatively indifferent to death always the feeble, the gloomy, and the misanthropic;—on the contrary, the feeling exists strongly or weakly in opposite characters indiscriminately.

I infer from these facts, that we are bound to life by a primitive instinct, connected with a particular organ. It is conjectured to lie at the base of the middle lobe of the brain, towards the mesial line. This idea is thrown out chiefly to excite to observation. Dr. A. COMBE found the convolution referred to, very large in a lady who was remarkable for the strength of her attachment to life. [illegible]

7. SECRETIVENESS.

THE organ is situated at the inferior edge of the parietal bones, immediately above Destructiveness, or in the middle of the lateral portion of the brain.

The faculties of the human mind possess spontaneous activity; hence various thoughts, desires, and emotions, arise involuntarily, the outward expression of which is not, in all circumstances, becoming. Secretiveness produces the instinctive tendency to conceal these, and to suppress their manifestations, till the understanding shall have decided on their propriety and probable consequences. Besides, man and animals are occasionally liable to the assaults of enemies, which may be avoided by concealment, in cases where strength is wanting to repel them by force. Nature, therefore, by means of this propensity, enables them to add prudence, slyness, or cunning, according to the dictates of the other faculties possessed by the individual, to their other means of defence. It may be applied in a great variety of ways; and a certain portion of it is indispensable to the formation of a prudent character. It imposes a salutary restraint on the manifestations of the other faculties, and serves as a defence against prying curiosity. Those in whom it is deficient are too open for the intercourse of general society; they are characterized by a headlong bluntness of manner, and deficiency of tact, arising from the instantaneous expression of each thought and emotion, as it flows on the mind, without regard to the delicacies required by time, place, or circumstances. Too great an endowment, on the other hand, when not regulated by strong intellect, and moral sentiments, produces abuses. The individual then mistakes cunning for prudence and ability; he conceals every purpose of his life, trifling or momentous; and he may be led even to practise lying, duplicity, and deceit. It supplies the cunning necessary to theft, and by producing an inward feeling of extreme secrecy lessens the fear of detection, and thus indirectly prompts to the commission of crime. I have found it large in a great number of habitual thieves.

The organ has been found large in actors, and in those who excel in the imitative arts. Combined with Imitation, it gives the power of *expression;* and in actors, it may be conceived to do this, by furnishing its possessor with the power of practising a conscious duplicity, a talent necessarily implied in the representation of a variety of characters, or by restraining the particular faculties whose influence requires to be withdrawn for the time. If we wish to deter a child from some act not very improper in itself, but which to him might be prejudicial, we feign anger, and forbid him: in this process Secretiveness probably restrains Philoprogenitiveness and Benevolence, and permits the natural language of Combativeness and Destructiveness to appear. When an actor performs Richard III., Secretiveness will suppress Benevolence, Veneration, and Conscientiousness, and allow ample scope to Combativeness, Destructiveness, Firmness, and Love of Approbation. If this theory be correct, it will be by restraining some faculties and permitting others to manifest themselves energetically, that Secretiveness will conduce to acting, as distinguished from Imitation. The power of *personation* is one of the ingredients in a talent for profound dissimulation and hypocrisy. Secretiveness is an element, along with the faculty of Wit, in a talent for *humor*, and produces the sly concealment of real character, design or sentiment, which is essential to humorous representations. In writing, it leads to Irony, which is a species of humor. It gives a sidelong glance, and suspicious look, to the eye; and, when energetic, inspires the individual with a desire to discover the designs of others, as well as to conceal his own. Mr. W. SCOTT has thrown great light on the functions of this faculty, in an Essay, published in the Phrenological Transactions.

This propensity appears to have been unknown to the metaphysicians. Lord BACON, however, in his Essay on Cunning, describes accurately many of its abuses. The organ is large in RAPHAEL, BRUCE, LA FONTAINE, and CLARA FISHER; also in American Indians, in the cunning debtor, DAVID HAGGART, Hindoos, and GIBSON: it is moderate in skulls with organs marked.—Established.

8. ACQUISITIVENESS.

THE organ is situated at the anterior inferior angle of the parietal bone. It was, by Dr. SPURZHEIM, called Covetiveness; Sir G. S. Mackenzie suggested the more appropriate name of Acquisitiveness.

The faculty produces the tendency to acquire, and the desire to possess in general, without reference to the uses to which the objects, when attained, may be applied. The idea of property is founded on it. It takes its direction from the other faculties, and hence may lead to collecting coins, paintings, minerals, and other objects of curiosity or science, as well as money. Idiots, under its influence, are known to collect things of no intrinsic value. A person in whom it is predominant, desires to acquire for the pleasure attending the mere act of acquisition. If he is owner of fifty acres, he will vastly delight in obtaining fifty more; if of a hundred thousand, he will still rejoice in doubling their number. His understanding may be convinced that he already possesses even superfluity; and, nevertheless, under the vivid impulses of the faculty, he may eagerly pant for more, for its gratification. This instinctive tendency to acquire and to accumulate, is the foundation of wealth, and of the conveniences and luxuries of civilized society. If men had always provided only what they could individually enjoy, they would never have emerged from the savage condition. Persons in whom the propensity is weak, think of every thing, and pursue every object, with more avidity than wealth; there is no intense vivacity in their pursuit of gain. Its abuse leads to covetousness, dishonesty, and theft. Avarice is the result of its predominating energy.

The metaphysicians have not admitted such a propensity, but resolve the desire of acquisition into love of the objects which wealth may purchase. The Phrenological view is founded on observation, and accords better with the phenomena of actual life. Lord **Kaimes**, however, observes, that ‘Man is by nature a *hoarding animal*, having an appetite for storing up things of use; and the sense of property is bestowed on men, for securing to them what they thus store up.’ This author has also remarked, that the same instinct is possessed by the lower animals. ‘The beavers,’ says he, ‘perceive the timber they store up for food to be their property; and the bees seem to have the same perception with regard to their winter’s provision of honey.’ He continues: ‘The appetite for property, in its nature a great blessing, degenerates into a great curse when it transgresses the bounds of moderation.’ (*Sketches*, Book i. Sk. 2.) These observations are highly phrenological. The organ is large in **Heaman**; full in the Rev. Mr. M.; and moderate in King **Robert Bruce**.—Established.

[illegible] increase [illegible]
[illegible] ? D.

9. CONSTRUCTIVENESS.

This organ is situated at that part of the frontal bone immediately above the spheno-temporal suture. Its appearance and situation vary slightly, according to the development of the neighboring parts. Its size is less easily distinguished, if the zygomatic process is very projecting, or if the middle lobes of the brain, or the forehead in general, or the organs of Language and

If united with large Form, Imitation, and Secretiveness, it may inspire with a love of portrait-painting. Its range is limited, also, in proportion to the degree of the reflecting organs with which it is combined; these, without it, never inspire with a genius for mechanics; but, when largely possessed, they, by giving a greater knowledge of the relation between means and ends, extend and facilitate its exertions. In the lower animals, it appears to be directed, in a great measure, to one special object; in the bird, to a particular form of nest; in the beaver, to a special fashion of a hut. These animals being deficient in the generalizing and directing powers conferred on man, appear to be inspired, not only with a desire to build, but with the comprehension of a specific fabric. The organ is indispensable to all who follow operative mechanical professions. It is large in the beaver, field-mouse, and other animals which build. The organ is large in RAPHAEL, MILLINER, of Vienna, BRUNEL, WILLIAMS, HAYDON, HERSCHEL, WILKIE, EDWARDS; and small in New Hollanders.—Established.

Genus II.—SENTIMENTS.

THESE faculties, like those which we have already considered, do not form specific ideas, but produce merely a SENTIMENT ; that is, a propensity, joined with an emotion, or feeling of a certain kind. Several of them are common to man and the lower animals; others are treated peculiar to man. The former shall be first treated of.

1. *Sentiments common to Man and the lower Animals.*

10. SELF-ESTEEM.

THE organ is situated at the vortex or top of the head, a little above the posterior or saggital angle of the parietal bones.

This faculty produces the sentiment of Self-esteem or Self-love in general. A due endowment of it, like that of all other faculties, produces only good effects. It imparts that degree of satisfaction with self, which leaves the mind open to the enjoyment of the bounties of Providence and the amenities of life, and inspires it with that degree of confidence in its own powers, which essentially contributes to their successful application. In general, it leads to esteem of the special propensities and sentiments which characterize the individual in whom it is powerful; and hence, when combined with vigorous moral sentiments and intellect, it contributes to true dignity and greatness of mind;—the individual esteems himself for those qualities which are really worthy of the esteem of others,—intellectual and moral excellence. It also aids in maintaining virtuous conduct, by communicating the feeling of self-respect. Deficiency of it produces want of confidence, and of a proper estimate of what is due to one's self. It is only when possessed in an inordinate degree, and indulged without direction by the higher faculties, that it occasions abuses. It may, then, in children show itself in pettishness, and a wilful temper; in adults, in arrogance, conceit, pride and egotism. It is an ingredient in Envy. There are persons who are exceedingly censorious, whose conversation is habitually directed to their neighbor's faults, who feel sore when others are elevated, and experience great pleasure in bringing them down;—such tendencies proceed from Self-Esteem and Destructiveness, not directed by Benevolence and Justice. The bitter and envious tone, the sententious reflections and the ill-concealed self-complacency of such persons, all indicate an internal adulation of self, and a vivid desire of superiority, acquired even by depreciating others. One form of abuse of the feeling, is contempt entertained for others. The mechanic contemns the domestic servant; the wholesale merchant contemns the retail dealer; the ancient feudal lord contemns the man who has risen to fortune and honor by his own talents. Children, in hooting and pelting an idiot, gratify Self-Esteem and Destructiveness. Their chief pleasure arises from a strong sense of their own superiority. Self-Esteem corresponds, in some measure, to the Desire of Power of the metaphysicians. Dr. THOMAS BROWN calls it 'Pride,' and defines it 'that feeling of vivid pleasure which attains the consciousness of our excellence,' vol. iii. p. 300. When very large, the individual walks generally in an erect posture, and, by his reserved and authoritative manner, induces the impression in others, that he considers himself infinitely elevated above his fellow-men. It disposes to the use of the *emphatic I*, in writing and conversation. Joined with Acquisitiveness, and not regulated by other sentiments, it produces 'Selfishness,' in the general acceptation of the term.

Nations differ in regard to the degree in which they possess this sentiment. The English have more of it than the French, and hence the manner of a genuine Englishman appears to a Frenchman cold, haughty, and supercilious. The lower animals, such as the turkey-cock, peacock, horse, &c. manifest feelings resembling pride or self-esteem. When the organ becomes excited by disease, the individual is prone to imagine himself a king, emperor, or a transcendent genius, and some have even fancied themselves the Supreme Being. The organ is large in HAGGART, the Hindoos, the Chinese, DEMPSEY; moderate in Dr. HETTE, and the American Indians.—Established.

11. LOVE OF APPROBATION.

THIS organ is situated on each side of that of Self-Esteem, and commences about half an inch from the lambdoidal suture.

The faculty produces the love of the esteem of others, expressed in praise or approbation. A due endowment of it is indispensable to an amiable character. It induces its possessor to make active exertions to please others; also to suppress numberless little manifestations of selfishness, and to restrain many peculiarities of temper and disposition, from the dread of incurring disapprobation. It is the butt upon which Wit strikes, when, by means of ridicule, it drives us from our follies. To be laughed at, is worse than death to a person, in whom this sentiment is predominant. The direction in which gratification of it will be sought, will depend on the other faculties with which it is combined in the individual. If the moral sentiments and intellect be vigorous, it will desire an honorable fame; and hence it animates and excites the poet, painter, orator, warrior, and statesman. If the lower propensities predominate, the individual will be pleased by the reputation of being the best fighter, or the greatest drinker of his circle.

When too energetic, and not regulated by the higher powers, it produces great abuses; it then gives rise to a fidgety anxiety about what others will think of us, which is at once subversive of happiness and independence. It renders the mere dicta of the society in which the individual moves, his code of morality, religion, taste, and philosophy; and incapacitates him from upholding truth or virtue, if disowned by those whom he imagines influential or genteel. It then overwhelms the artist, author, or public speaker, with misery, if a rival is praised in the journals in higher terms than himself. A lady is then tormented at perceiving, in the possession of an acquaintance, finer dresses or equipages than her own. It excites the individual to talk of himself, his affairs, and connexions, so as to communicate to the auditor vast ideas of his greatness or goodness; in short, vanity is one form of its abuse. 'Sir,' says Dr. JOHNSON, 'GOLDSMITH is so much afraid of being unnoticed, that he often talks, merely lest you should forget that he is in the company.' When not combined with Conscientiousness and Benevolence, it leads to feigned professions of respect and friendship; and many manifest it by promises and invitations, never intended to be fulfilled or accepted. It, as well as Self-Esteem, prompts to the use of the first person, but its tone is that of courteous solicitation, while the *I* of Self-Esteem is presumptuous, and full of pretension.

When, on the other hand, the organ is deficient, and the sentiment, in consequence, is feeble, the individual cares little about the opinions entertained of him by others:—If they have not the power to punish his person, or abridge his possessions, he is capable of laughing at their censures, and contemning their applause. Persons of this sort, if endowed with the selfish propensities in a strong degree, constitute what are termed ‘ impracticable ’ men; their whole feelings are concentrated in Self, and they are dead to the motive which might induce them to abate one iota of their own pretensions to oblige others.

The disposition to oblige, conferred by this sentiment, may be distinguished from the genuine kindness which springs from Benevolence, by this, that the Love of Approbation prompts its possessor to do most for those who, from superiority in rank, wealth, power, or reputation, least require his aid; whereas Benevolence takes exactly the opposite direction. The two sentiments, when both vigorous, greatly aid each other.

The organ is larger in women in general than in men. The French are more remarkable for a larger development of it than of Self-Esteem; and on this account appear to the English, in whom the latter faculty predominates, vain, ostentatious, and absurdly complimentary. This organ is uniformly large in bashful individuals—one element of this disposition being the fear of incurring disapprobation. The metaphysicians admit the sentiment, under the name of the Desire of Esteem. It is very powerful in some of the lower animals, as the dog, horse, &c. The organ is large in BRUCE, Dr. HETTE, American Indians, CLARA FISHER; deficient in D. HAGGART and DEMPSEY.—Established.

12. CAUTIOUSNESS.

This organ is situated near the middle of each parietal bone, where the ossification of the bone generally commences.

The faculty produces the emotion of fear in general, and prompts its possessor to take care: hence it is named Cautiousness. A due degree of it is essential to a prudent character. The tendency of it is, to make the individual in whom it is strong, hesitate before he acts, and, from apprehending danger, to trace consequences, that he may be assured of his safety. When too powerful, it produces doubts, irresolution, and wavering. When deficient, the individual is not apprehensive about the results of his conduct: he is rash and precipitant, and often proceeds to act without mature deliberation. The involuntary activity, from internal causes, of this organ, in those in whom it is too powerful, produces sensations of dread and apprehension, gloomy despondency, or even despair, without an adequate external cause. A great and involuntary, but momentary activity of it, occasions a *panic*, a state in which the mind is hurried away by an irresistible emotion of fear, disproportioned to the outward occasion. The organs are generally largely developed in children; and, in some instances, are so prominent, as to alarm mothers with the fear of disease or deformity. Such children may be safely trusted to take care of themselves; they will rarely be found in danger. When, on the other hand, the organs are small in a child, he will be a hapless infant; fifty keepers will not supply the want of the instinctive guardianship performed by adequate Cautiousness. This is another element in the formation of a bashful character, and produces the timidity essential to it. Many of the lower animals, as the hare, rook, &c. possess the organ largely developed; among them, it is generally larger in the female than in the male; and naturalists have observed that more of the latter are snared, taken or killed, by the hunter, than of the former, even allowing for the natural difference between their original numbers. The organ is large in BRUCE, RAPHAEL, HETTE, the Mummies, and Hindoos; moderate in BELLINGHAM, MARY MACINNES, and Negroes.—Established.

13. BENEVOLENCE.

THIS organ is situated at the upper part of the frontal bone, in the coronal aspect, and immediately before the fontanel.

The faculty produces the desire of the happiness of others, and disposes to compassion and active Benevolence. It communicates mildness and cheerfulness to the temper, and disposes the possessor to view charitably the actions and character of others. When abused, it leads to profusion. A small development of the organ does not produce cruelty as its proper function, but only indifference to the welfare of others.

When Destructiveness is large, and this organ small, cruelty may result from the uncontrolled activity and abuse of the former. The lower animals possess this organ, but the faculty in them seems to be limited, in a great degree, to the production of passive mildness of disposition. Dogs, horses, monkeys, &c. which have the corresponding part of the forehead large and elevated, are mild and pacific; those, on the other hand, in which it is small and depressed, are ill-natured. It is depressed in all the ferocious tribes of animals, and also in nations remarkable for cruelty, as the Charibs, &c. The ancients, make the top of the forehead much higher in SENECA than in NERO.

It has been objected, that Nature cannot have placed a faculty of Benevolence, and another of Destructiveness, in the same mind; but *Man* is confessedly an assemblage of contradictions. Sir Walter Scott speaks of 'the well-known cases of those men of *undoubted benevolence* of character and disposition, whose *principal delight is to see a miserable criminal*, degraded alike by his previous crimes, and the sentence which he has incurred, *conclude a vicious and a wretched life, by an ignominious and cruel death.*' (St. Ronan's Well.) This indicates Benevolence co-existing in the same individual with Destructiveness. The greatest of Poets has said,—

> 'O thou goddess,
> Thou divine nature, how thyself thou blazon'st
> In these two princely boys! They are as *gentle*
> As zephyrs, blowing below the violet,
> Not wagging his sweet head; and yet as *rough*,
> Their royal blood enchaf'd as the rud'st wind,
> That by the top doth take the mountain-pine,
> And make him stoop to the vale.'

Here **Shakspeare** informs us, that these boys manifested much Combativeness and Destructiveness, combined with great Benevolence. The Sword is one of the emblems of State, and what is it but the symbol of Destruction ready to fall on the heads of those who offend against the Laws?—ministering thus, in its very severity, to purposes of Benevolence and Justice. What are the implements of war but instruments of Destruction; and for what end do soldiers take the field, but to destroy their enemies? And yet, surgeons and numerous assistants attend on armies, to succor those on whom the calamities of war have fallen; the two faculties, which are deemed incompatible, being thus manifested together, with deliberate design. Without Combativeness and Destructiveness, there would be no war; and without Benevolence, if these existed, there would be neither mercy nor compassion. Instead, therefore, of the co-existence of these faculties forming an objection to the Phrenological system, it proves its harmony with Nature. Deficiency of this organ cannot be compensated by Adhesiveness, Love of Approbation, or any others. When it is small, there is a want of that active goodness, that ever-flowing kindness, which it produces.

The organ is large in **Jacob Jervies**, **Henri Quatre**, **Raphael**, **Hette**; very small in **Bellingham**, **Griffiths**, and the Charibs; moderate in **Bruce** and **Gordon**.—Established.

II. *Sentiments proper to Man.*

Hitherto we have considered Man so far as he is animal. But, besides the organs and faculties already spoken of, common to him with the brutes, he is endowed with a variety of sentiments, which constitute the human character, and of which the lower creatures are entirely destitute. The parts which constitute the organs of these faculties are not to be found in the brains of the latter. The faculties now to be treated of produce emotions or feelings, but do not form ideas.

14. VENERATION.

This organ is situated at the middle of the coronal aspect of the brain, at the bregma or fontanel of anatomists.

The faculty produces the sentiment of respect and reverence; and when directed to the Supreme Being, leads to adoration. It predisposes to religious feeling, without determining the manner in which it ought to be directed; so that, if the understanding be very unenlightened, it may be gratified with the worship even of images or idols. It is the source also of the tendency to look up to and admire superiors in rank and power; and, in this way, disposes to obedience. It gives rise to the profound emotions of respect experienced by many when looking on the ruins of a palace or temple, the graves of the forefathers, or the former habitations of men eminent for genius or virtue. It enters largely into the constitution of a devoted antiquary. It is also the chief element in filial piety. When the organ is large, and that of Self-Esteem small, humility is the result.

A deficiency of it does not produce profanity, as a positive manifestation; it only renders the mind little sensible to the respectful and reverential feelings before described; and in consequence, leaves the other faculties at liberty to act without modification by its influence. When too energetic, and not enlightened by intellect, it produces superstitious respect for objects and opinions which have nothing but their antiquity to recommend them, and renders its possessor prone to venerate every ancient absurdity, 'as the wisdom of our ancestors.' In this way it often presents the most formidable obstacles to improvements attended with innovation.

The metaphysicians do not treat of this sentiment under the same name, nor in the same point of view as the foregoing. Dr. THOMAS BROWN, however, when writing of Pride and Humility, mentions a 'tendency to look *above* rather than below,' (vol. iii. p. 313,) which is one effect of veneration. Authors who have written on natural religion, say, that we perceive order, beauty, power, wisdom, and harmony, in the works of creation, and hence infer that a DEITY exists. In this view the Phrenologists agree; but the understanding only perceives the facts, and draws inferences; and after this induction is completed, it experiences no tendency to adore the God whom it has discovered. In point of fact, however, the tendency to worship is a stronger principle in the human mind, than the understanding itself; for the stupid and ignorant are often prone to venerate, while their reflecting faculties are incapable of directing them to an object worthy of their homage. The existence of the sentiment of Veneration distinct from intellect, explains this anomaly. Sceptical writers, in general, appear either to have been unacquainted with it, or to have judged expedient to pass it over without notice. Its existence shows that Religion has a foundation in nature. The organ is large in the Negroes, RAPHAEL, BRUCE, KAPITAPOLE, MARTIN; small in Dr. HETTE.—Established.

15. FIRMNESS.

THIS organ is situated at the posterior part of the coronal region of the head, close upon the middle line.

It is difficult to analyze and to describe the ultimate principle of this faculty. Its effects are sometimes mistaken for will; because those in whom it is large are prone to use the phrase, 'I will,' with great emphasis, which is the natural language of determination; but this sentiment is different from proper volition. It produces determination, constancy, and perseverance. Fortitude, as distinguished from active courage, results from it. When powerful, it gives a fixed, forcible, and emphatic manner to the gait, and a corresponding tone to the voice. It is indispensable to the attainment of excellence in any difficult department of art, science, or business. It gives, however, perseverance only in manifesting the faculties which are possessed by the individual in adequate strength. A person with great Firmness, and much Tune, may persevere in making music: diminish the Tune, so as to render him insensible to melody, and he will not persevere in that attempt; but if he have great Causality, he may then be constant in abstract study. When too energetic, and not well directed, it produces obstinacy, stubbornness, and infatuation. When weak, the individual is prone to yield to the impulses of his predominating feelings. If Benevolence assumes the sway, he is all kindness; if Combativeness and Destructiveness are forcibly excited, he falls headlong into passion, outrage, and violence. He also experiences great difficulty in steadily pursuing any line of action, and is prone to deviate from his object, when assailed either by internal excitement or external solicitations. The metaphysicians appear not to have been acquainted with this sentiment.—The organ is large in BRUCE, HAGGART, American Indians; small in Mrs. H. and GIBSON.—Established.

16. CONSCIENTIOUSNESS.

THIS organ is situated on the posterior and lateral parts of the coronal region of the brain, upwards from Cautiousness, and backwards from Hope. In Dr. **Gall**'s Plates, the function is marked as unascertained. Dr. **Spurzheim** discovered that it is connected with Conscientiousness. In his English work, published in 1815, he mentions this function as probable; but many subsequent observations authorize me to state it as ascertained.

The faculty produces the feeling of obligation, incumbency, right and wrong, for which we have no single definite expression in the English language; just as Ideality produces the sentiment of Beauty. Justice is the result of this sentiment, acting in combination with the intellectual powers. The latter investigate the motives and consequences of actions; but, after having done so, they, of themselves, experience no emotions. In surveying human conduct, however, as soon as the intellect has thoroughly penetrated into the springs from which it proceeds, a feeling of decided approval or condemnation, distinct from all other sentiments, and from pure intellection, arises in the mind; and this is produced by the faculty of Conscientiousness. A large endowment of it is of the highest importance in regulating conduct. The individual is then disposed to act justly from the love of justice; he is delighted with the observance of right, and disgusted with the doing of wrong; he is inclined to form equitable judgments of the motives and conduct of others; is scrupulous, and, when deserving of censure, is as ready to condemn himself as his neighbor. When the organ, on the other hand is small, the power of experiencing the sentiment is feeble, and the individual, in consequence, is more prone to do an unprincipled action, if tempted by interest or inclination. He experiences a difficulty both in perceiving the quality of justice itself, and in feeling the imperious obligations of duty, arising from dictates. Such persons, taking their own minds as types of those of the human race, imagine that the rest of the world is carrying on a solemn farce, in believing in the immutable distinction of right and wrong, and trusting in the ultimate triumph of truth and justice over selfishness and fraud; they regard as eminently weak, those individuals who adopt such views as practical maxims; they conceive themselves to have attained to an extraordinary depth of penetration, in discovering that these notions spring from senseless enthusiasm, and that selfishness, disguised occasionally by a show of generosity, is the real origin and object of human actions. To such men, Phrenologists, and all who espouse unfashionable opinions, merely because they are true, and rely on their truth for their success, appear extremely deficient in practical sense and knowledge of the world. In point of fact, however, the pretensions of such men to superior sagacity, in such cases, are founded on a great moral imperfection; and indicate lamentable weakness in an important mental function, instead of depth and superior illumination.

N. L. Remorse is a painful affection of this sentiment, occasioned by the conduct being in opposition to its dictates. In the Essays on Phrenology, I stated, that Gratitude probably arises from this faculty; but Sir G. S. MACKENZIE, in his Illustrations of Phrenology, has shown, that 'Gratitude is much heightened by Benevolence,'—a view in which I now fully coincide.

Some metaphysical writers admit this sentiment, and others deny it, apparently just as it was strong or weak in their own minds. Dr. THOMAS BROWN maintains its existence with great eloquence and success; and his views accord, in a remarkable degree, with those brought to light by Phrenological observations. The only point in which his knowledge appears to have been defective, is, that it is possessed, in very different degrees of strength, by different individuals, according as the organ is large or small.* The organ is large in HETTE, Mrs. H.; small in BRUCE, HAGGART, BELLINGHAM, GIBSON, and in the skulls of most of the savage tribes.

---

* I embrace this opportunity of paying a humble tribute to the talents of the late Dr. THOMAS BROWN. The acuteness, depth, and comprehensiveness of intellect displayed in his works on the Mind, place him in the highest rank of philosophical authors ; and these great qualities are equalled by the purity and vividness of his moral perceptions. His powers of analysis are unrivalled, and his eloquence is frequently splendid. His 'Lectures' will remain a monument of what the human mind was capable of accomplishing, in investigating its own constitution by an imperfect method. In proportion as Phrenology becomes known, the admiration of his genius will increase ; for it is the highest praise to say, that, in regard to many points of great difficulty and importance in the Philosophy of Mind, he has arrived, by his own reflections, at conclusions harmonizing with those obtained by Phrenological observation. Of this, his doctrine on the moral emotion discussed in the text, is a striking instance. Sometimes, indeed, his arguments are subtile, his distinctions too refined, and his style is circuitous; but the Phrenologist will pass lightly over these imperfections, for they occur only occasionally, and arise from mere excess of the faculties of Secretiveness, Comparison, Causality, and Wit; on a great endowment of which, along with Concentrativeness, his Penetration and Comprehensiveness depended. In fact, he possessed the organs of these powers largely developed, and they afford a key to his genius.

17. HOPE.

This organ is situated on each side of that of Veneration, and extends under part of the frontal and part of the parietal bones.

The faculty produces the sentiment of hope in general, or the tendency to believe in the possibility of what the other faculties desire, but without giving the conviction of it, which depends on Reflection. It inspires with gay, fascinating, and delightful emotions, painting futurity fair and smiling as the regions of primeval bliss. It invests every distant prospect with hues of enchanting brilliancy; while Cautiousness hangs clouds and mists over distant objects, seen by the Mind's eye. When too energetic and predominant, it disposes to Credulity, and, in mercantile men, leads to rash and inconsiderate speculation. Persons so endowed never see their own situation in its true light, but are led by their extravagant Hope to magnify tenfold every advantage, while they are blind to every obstacle and abatement. They promise largely, but rarely perform. Intentional guile, however, is frequently not their object;—they are deceived themselves, by their constitutional tendency to believe every thing possible that is future, and promise in the spirit of this credulity. Those who perceive this disposition in them, ought to make the necessary abatement in their expectations. When the organ is very deficient, and that of Cautiousness large, a gloomy despondency is apt to invade the mind.

In Religion, this faculty favors the exercise of Faith; and by producing the natural tendency to look forward to futurity with expectation, disposes to belief in a life to come. It is treated of by the metaphysicians. The discovery of the organ and sentiment is due to Dr. SPURZHEIM; for Dr. GALL did not admit them. In his works, the function of the part of the brain in question is marked as unascertained. His notion is, that Hope is the attribute of every faculty; but he appears to mistake Desire for Hope. Every faculty Desires, but each does not produce Hope; nay, Desire is sometimes strong, when Hope is feeble or extinct. A criminal on the scaffold may strongly Desire to live, when he has no Hope of escaping death. I am convinced by many observations, that Dr. SPURZHEIM's views are correct, and now regard the organ as established. It is large in RAPHAEL, small in Dr. HETTE.

18. WONDER.

DR. SPURZHEIM states that the faculty connected with this organ produces the tendency to believe in inspirations, presentiments, phantoms, &c. In his French works he named it 'Surnaturalité;' but he now calls it the Sentiment of the Marvellous, or Marvellousness. I have met with persons excessively fond of news, which, if extravagant, were the more acceptable; prone to the expression of surprise and astonishment in ordinary discourse; deeply affected by tales of wonder; delighting in the Arabian Night's

Entertainments, and the mysterious incidents abounding in the Waverley Novels; and in them I have uniformly found the part of the brain in question largely developed. When the organ predominates in an individual, he experiences a natural disposition to believe in the wonderful and miraculous. When any marvellous circumstance is communicated to him, the tendency of his mind is to believe it without examination; and an effort of philosophy is necessary to resist the belief, instead of evidence being requisite to produce it. In some individuals, in whom the organ is large, there is a peculiar and unconscious turning up of the exterior angles of the eye-lashes, expressive of surprise. In other persons, I have found the part of the brain in question small, and in them it was accompanied with a staid soberness of feeling, diametrically the opposite of the manifestations above described. Such individuals were annoyed by every thing marvellous or strange; they scarcely felt or expressed surprise, and had no taste for narratives —leaving the beaten track of probability or reality, and soaring into the regions of supernatural fiction. On analyzing these manifestations, they all appear to be referable to the sentiment of Wonder, an emotion which is quite distinguishable from those hitherto enumerated. This sentiment, in a state of extreme and uncontrolled energy, probably gave rise to those extraordinary feelings and disturbed imaginations which led Dr. SPURZHEIM at first to name the faculty 'Surnaturalité.' The name which he now uses coincides in meaning with that which I have ventured to propose; and, regarding the function of the organ itself, there is no essential difference between us. The organ is uniformly large in fanatics. It predominates in the Rev. EDWARD IRVING, and all his followers whom I have seen.

Dr. ADAM SMITH, in the History of Astronomy, calls Wonder a Sentiment, and Dr. THOMAS BROWN, vol. iii. p. 59, admits it as a primitive emotion, and contends with success, that Surprise and Wonder are essentially the same feeling, only excited by different objects or occurrences. We *wonder* at a comet, from its novelty; we are *suprised* to meet a friend in Edinburgh whom we believed to be in London; but it is the novel and unexpected *situation* in which we see him that causes the surprise, and not the appearance itself. Dr. BROWN distinguishes the emotion of Wonder from those of Beauty and Grandeur, and very justly observes, 'that we may be struck at the same time with the beauty or grandeur of a new object; and our mixed emotion of the *novelty* and *beauty combined* will obtain the name of *Admiration;*' p. 57.—Some men's intellects do not easily or accurately discriminate between the possible and the impossible;—this probably arises from the predominance of Wonder over Causality and Conscientiousness.—Established.

19. IDEALITY.

THIS organ is situated nearly along the lower edge of the temporal ridge of the frontal bone.

The faculty produces the desire of exquisiteness and perfection, and delights in the 'beau ideal.' The knowing and reflecting faculties perceive qualities as they exist in nature; but this faculty desires something more exquisitively lovely, perfect, and admirable, than the scenes of reality. It tends to elevate and endow with splendid excellence every idea conceived by the mind; and stimulates the other faculties to imagine scenes and objects invested with the qualities which it delights to contemplate. It is particularly valuable to man as a progressive being. It inspires him with a ceaseless love of improvement, and prompts him to form and realize splendid conceptions. When too powerful it gives a manner of feeling and of thinking befitting the regions of fancy more than the abodes of men. (Phrenological Journal, vol. ii. p. 147.) It is essential to the poet, painter, sculptor, and all who cultivate the fine arts. It corresponds to the emotion of Beauty of Dr. THOMAS BROWN. (Vol. iii. p.134.) A good endowment of it elevates and expands the other feelings and conceptions, directs them to higher objects than those which would be sufficient to gratify themselves, and thus gives a constant tendency to, and capacity for, refinement. A great deficiency of it leaves the mind in a state of homeliness or simplicity, varying its appearances according to the other faculties which predominate in the individual. The organ is larger in civilized than in savage nations; in the European, for example, than in the Negro, American Indian, and New Hollander. MILTON, SHAKSPEARE, and BYRON's poetry abound with its influence, that of CRABBE has less; and it is scarcely distinguishable in the verses of Dean SWIFT. The organ is large in RAPHAEL, VOLTAIRE, WORDSWORTH, WILKIE, BURKE, HAY-

DON, **HENRI QUATRE**, **FRANCOIS CORDONNIER**; small in New Hollanders, Mr. **HUME**, **BELLINGHAM**, **HAGGART**, **GORDON**.—Established.

20. WIT, OR MIRTHFULNESS.

2 Organs, [illegible]

EVERY one knows what is meant by Wit, and yet no word presents more difficulties in its definition. Dr. **GALL** observes, that, to convey a just idea of the faculty, he could discover no better method than to describe it as the predominant intellectual feature in **RABELAIS**, **CERVANTES**, **BOILEAU**, **RACINE**, **SWIFT**, **STERNE**, **VOLTAIRE**. In all these authors, and in many other persons who manifest a similar talent, the anterior-superior-lateral parts of the forehead are prominent and rounded. When this development is excessively large, it is attended with a disposition, apparently irresistible, to view objects in a ludicrous light. When joined with Combativeness and Destructiveness large, it leads to satire; and even friends will then be sacrified for the sake of a joke. It gives the talent also for epigrams. Persons in whom this organ is small, regard wit as impertinence, and are offended by it. It is greatly aided by comparison, which suggests analogies and resemblances.

This faculty was treated as an intellectual power in Dr. **SPURZHEIM**'s first English work; but, in his French and later English works, it is considered as a sentiment. He regards it as giving the feeling of the ludicrous, and producing the tendency to represent objects under this aspect, in the same way as Ideality gives a feeling of the beautiful, and also the tendency to elevate and adorn all the conceptions of the mind. Wit, according to this view, would consist in conceptions formed by the higher intellectual powers, imbued with the sentiment in question. Mr. SCOTT has given a beautiful analysis of Humor; * the talent for which is produced by Secretiveness acting in combination with Wit; the former giving the slyness, the latter the ludicrous coloring, which together constitute humor. Imitation greatly aids these powers in producing humorous effect. Mr. HEWETT WATSON regards this faculty as an intellectual power, whose function is to take cognizance of the intrinsic properties of things. According to him, the ludicrous is a *mode* of manifestation of all the faculties. The faculty in question produces wit as a *mode* of manifestation, by comparing or contrasting the intrinsic qualities of objects. (See Phren. Jour. vol. vi p. 451.) The organ of Wit is large in STERNE, VOLTAIRE, HENRI QUATRE; and moderate in Sir J. E. SMITH, Mr. HUME, Hindoos.—Organ established; elementary function unascertained.

21. IMITATION.

ONE of Dr. GALL's friends desired him to examine his head, because he had a part of it enlarged in an un-

---

* Phren. Trans. p. 174.

common degree. **Gall** found the superior-anterior portion of the head, on the two sides of Benevolence, rising up in the form of a segment of a circle. The individual had a particular talent for imitation. Dr. **Gall** instantly proceeded to the Institution for the Deaf and Dumb, to examine the head of a scholar named **Casteigner**, who, six weeks before, had been received into the establishment, and had excited attention by his prodigious power of mimicry; and he found the same configuration of head in him. These facts suggested the notion that this talent might depend on a primitive faculty, of which this was the organ. He afterwards verified this conclusion, by a great number of additional observations. I have examined the heads of a number of distinguished artists and players, and found the organ uniformly large. The faculty gives the power of Imitation in general; and when joined with Secretiveness, it gives expression in the fine arts. It is indispensable to actors, potrait-painters, sculptors, and engravers; and it gives the tendency, in speech and conversation, to fit the action to the words. It is generally active, and the organ large, in children. When the organ is deficient, the individual is destitute of flexibility of manner. He presents habitually the air of his predominant dispositions. When this organ and that of Benevolence are both large, the anterior portion of the coronal aspect of the head rises high above the eyes, is broad, and presents a level surface, as in **Clara Fisher**: when Benevolence is large, and Imitation small; there is an elevation in the middle, with a rapid slope on each side. The organ is large in **Raphael** and **Clara Fisher**; small in **Jacob Jervis**.—Established.

ORDER II.

INTELLECTUAL FACULTIES.

THESE faculties communicate to man and animals knowledge of their own internal sensations, and also of the external world: their object is to know existence, and to perceive qualities and relations. They consist of three genera: the first includes the Five Senses; the second, those powers which take cognizance of external objects and their relations, named Knowing or Perceptive Faculties; and the third, the faculties which trace abstract relations, and reason, or reflect.

Genus I.—EXTERNAL SENSES.

BY means of the Five Senses, man and animals are brought into communication with the external world.

Each sense has two organs; but a single impression is received by the mind from affections of them. Various theories have been formed to account for this circumstance. Drs. GALL and SPURZHEIM are of opinion, that only one of the organs of a sense is active at the same time, and that they alternately act and rest. Thus, if we look through spectacles having one glass yellow and another blue, external objects will not appear green, as has been reported by philosophers, and believed by the public; but, if the glasses are equally thick, and equally transparent, they will be seen blue or yellow, according as we look fixedly with the one eye or the other. If one of the glasses is thinner or more transparent than the other, it will give its color to the objects perceived. Another explanation may be found in the fact, that the mind has no consciousness either of the existence of the organs of sense, or of the functions performed by them. Hence, the perceptions of the mind are always directed to the objects which make the impressions, and not to the instruments by means of which they are experienced; and the mental affection partakes of the unity of the object exciting it, and not of the duplicity of the organs through which the impression is transmitted.

The functions of every sense depend on its peculiar organization; and hence no preceding exercise or habit is necessary in order to acquire the special power of any sense. If the organization be perfect, the functions are perfect also; and, if the former be diseased, the latter are deranged, notwithstanding all preceding exercise. Each sense is subject to its own positive laws. For example, we see according to the laws of the refraction of light; and hence a straight rod, half plunged in water, appears crooked, although touch proves that, in this situation, it continues straight. This is a kind of rectification; but it must not be confounded with the doctrine which maintains that one sense acquires its functions by means of another. Touch may show that a rod, which is plunged in water, and looks crooked, is straight; but the eyes will see it crooked as before. The rectifications thus effected by the senses are mutual, and not the prerogative of one sense. In this view, the eyes may rectify the sense of touch. If, without our knowledge, a piece of thin paper be placed betwixt one of our fingers and the thumb, we may not *feel* but we may *see* it. Even smell and taste may rectify the senses of seeing and touch. Thus many fluids *look* like water; and it would be impossible to discover them to be different by the sense of touch; but it is easy to do so by smell and taste.

It is difficult to point out accurately the precise limits of the functions of the senses, because, in every act of perception, their instrumentality is combined with that of the internal faculties. The senses themselves *do not form ideas.* For example, when an impression is made upon the hand, the organs of touch there situated receive it, and transmit it to the brain; and a *faculty of the mind*, through the instrumentality of another organ, *perceives the object.* Hence, previous to every perception, there must be an antecedent impression on the organs of sense; and the whole functions of these organs consist in receiving and transmitting this impression to the organs of the internal faculties. The organs of sense, in a state of health, never produce the impressions which result from the activity, except when excited by an external cause. Hence, whatever perceptions or impressions, received from external objects, *can be recalled* by an act of volition, cannot depend *exclusively* upon the senses; because we cannot excite them by an act of volition. On the other hand, whatever impression we are unable to recall by an act of the Will, must depend on the senses alone ; for we are able to produce at pleasure ideas formed by our internal intellectual faculties. There is reason to conjecture that particular parts of the brain receive impressions transmitted by the external senses, and that it is by their instrumentality that the gourmand, for instance, recalls the flavor of a particular wine or the savor of a favorite dish. He cannot reproduce the part of the sensation which depends on the activity of the nerves of taste ; but he can recall all that is mental in the perception or that depends on the activity of any part of the brain.

After these general considerations, which apply to all the external senses, a few words may be added on the specific functions of each sense in particular.

FEELING OR TOUCH.

Dr. Spurzheim inferred from pathological facts, that the nerves of motion must be distinct from the nerves of feeling ; and subsequent experiments have proved his inference to be well founded. The sense of feeling is continued, not only over the whole external surface of the body, but even over the intestinal canal. It gives rise to the sensations of pain and pleasure ; of the variations of temperature ; and of dryness and moisture. These cannot be recalled by the will ; and I therefore consider them as depending on the sense alone. The impressions made upon this sense serve as the means of exciting in the mind perceptions of figure, of roughness and smoothness, and numerous other classes of ideas; but the power of experiencing these perceptions, is in proportion to the perfection of certain internal faculties, and of the sense of touch jointly, and not in proportion to the perfection of this sense alone.

TASTE.

The functions of this sense are, to produce sensations of taste alone; and these cannot be recalled by the will. We may judge of the qualities of external bodies by means of the impressions made on this sense; but to form ideas of such qualities is the province of the internal faculties.

SMELL.

By means of smell, the external world acts upon man and animals from a distance. Odorous particles are conveyed from bodies, and inform sentient beings of the existence of the substance from which they emanate. The functions of smell are confined to the producing of agreeable or disagreeable sensations, when the organ is so affected. These cannot be reproduced by an effort of the will. Various ideas are formed of the qualities of external bodies, by the impressions which they make upon this sense; but these ideas are formed by the internal faculties of the mind.

HEARING.

In new-born children this sense is not yet active; but it improves by degrees, and in proportion as the vigor of the organ increases. Its proper function is the production of the impressions called Sounds; yet it assists a great number of internal faculties. The auditory nerve has a more intimate connexion with the organs of the moral sentiments than with those of the intellectual faculties.

SIGHT.

This fifth and last of the senses, is the second of those which inform man and animals of remote objects, by means of an intermedium, and which, in this instance, is Light. This sense has been said to acquire its functions by touch or by habit. But vision depends on the organization of the eye, and is weak or energetic, as the organization is imperfect or perfect. Some animals come into the world with perfect eyes; and these see distinctly from the first. The young chicken is guided immediately on escaping from the shell, by the sense of sight; and the sparrow, on taking its flight from the nest, does not strike its head against a wall, or mistake the root of a tree for its branches; and yet, previously to their first attempts, these animals can have no *experience* of distance. On the other hand, animals which come into the world, with eyes in an imperfect state, distinguish size, form, and distance, only by degrees. This last is the case with new-born children. During the first six weeks after birth, their eyes are almost insensible to light; and it is only by degrees that they become fit to perform their natural functions. When the organs, however, are matured, children see, without the aid of habit or education, in the same manner, and as accurately, as the greatest philosopher. The eye only receives, modifies, and transmits the impressions of light; and internal faculties form conceptions of the figure, color, distance, and other attributes of external objects: the power of forming these conceptions is in proportion to the perfection of the eyes and the organs of the internal faculties jointly.

Genus. II.—PERCEPTIVE FACULTIES.

THE faculties now to be treated of, take cognizance of the existence and physical qualities of external objects. They correspond in some degree, to the Perceptive Powers of the metaphysicians, and form ideas. Their action is attended with a sensation of pleasure; but (except in the case of Tune) it is weak, compared to the emotions produced by the faculties already treated of; and the higher the functions, the less vivid is the emotion attending the active state. In judging of the size of the intellectual organs, the extent to which the anterior lobe of the brain stretches forward before Constructiveness, and rises upwards above the eyes, ought to be observed.

22. INDIVIDUALITY.

THIS organ is situated in the middle of the lower part of the forehead. When large, it produces prominence and breadth between the eyebrows, at the top of the nose; when small, that part is narrow. The faculty gives the desire, accompanied with the ability, to know objects as mere existences, without any view to the purposes to which they may be subservient. It gives the notion of subſtance, and forms the class of ideas represented by nouns when used without an adjective; as, *rock*, *man*, *horse*. It takes its direction towards particular objects, in preference to others, from the other faculties with which it is combined. It prompts to observation, and is a great element in a genius for those sciences, which consist in a knowledge of specific existences, such as natural history. Individuals in whom it is large, experience a positive delight in becoming acquainted with natural objects, without reference to their uses or other qualities—a pleasure which is incomprehensible, and appears trifling, to persons in whom the organ is small. This faculty leads to personification, or the tendency to ascribe existence to mere abstractions of the mind; such as Ignorance, Folly, or Wisdom. When aided by Eventuality and Comparison, it produces the metaphorical writing which distinguishes BUNYAN. The organ is small in the Scotts, in general; it is large in the English, and still larger in the French. The frontal sinus is generally found in the situation of this organ in adults, and this throws a difficulty in the way of judging of its size. The function, however, is ascertained by observing young persons, in whom the sinus is not formed, and by the negative evidence; that is, when externally there is a depression, the brain in that part is necessarily small, and the mental power is invariably found weak. This concomitance of deficiency of organ and power proves the function; although, when there is an external elevation, the faculty may not be invariably strong, on account of the swelling outwards, in some individuals, being caused by the sinus and not by the brain.—Established.

23. FORM.

THE size of this organ is indicated by the width between the eyes; the different degrees of which correspond to the greater or less development of the portions of brain situated on the mesial or inner side of the orbitary plates of the frontal bone, on each side of the *crista galli*. In some instances the frontal sinus affects this organ. The function of the organ is to judge of Form. It aids the mineralogist, portrait-painter and all persons engaged in the imitative arts. It gives the power of distinguishing faces. Dr. SPURZHEIM mentions, that it is large in the Chinese whom he had seen in London, and also in the French. Children, in whom this organ, together with those of Constructiveness, Secretiveness, and Imitation are large, frequently draw, cut, or scratch the figures of men and animals, for their amusement. Large in King GEORGE III., and in the Chinese skulls.—Established.

24. SIZE.

PERSONS are found who have an intuitive facility in estimating Size, and in whom the powers of distinguishing Form and relative position are not equally strong; and the part of the brain under No. 21, have been observed in such individuals to be large. It gives the power of perceiving and judging of perspective. Some officers in the army, in forming their companies into line, estimate the space which the men will occupy with perfect accuracy, and others can never learn to judge correctly of this requisite; and the organ has been observed largely developed in the former. Locality also may conduce to this talent. As the frontal sinus throws a difficulty in the way of observing this organ also, the negative evidence is chiefly to be relied on; and it is stated as only *probable*. Large in BRUNEL, WILLIAMS, DOUGLAS; small in FERGUSON.

25. WEIGHT, OR RESISTANCE.

THERE seems to be no analogy between the weight or resistance of bodies, and their other qualities. They may be of all forms, sizes and colors, liquid or solid, and yet none of these features would necessarily imply that one was heavier than the other. This quality, therefore, being distinct from all others, we cannot logically refer the cognizance of it to any of the faculties of the mind, which judge of the other attributes of matter; and, as the mental power undoubtedly exists, there appears reason to conjecture that it may be manifested by means of a special organ. Persons who excel at archery and quoits, also those who find great facility in judging of momentum and resistance in mechanics, are observed to possess the parts of the brain lying nearest to the organ of SIZE largely developed; and so many instances of this kind have occurred, that the situation of the organ is now marked on the plate. Mr. SIMPSON conceives the faculty to produce the instinctive power of adapting animal movements to the laws of equilibrium. (See Phren. Jour. vol. ii. p. 302.) In turners, I have observed the organ largely developed; and it may now be stated as probable. The frontal sinus, when very large, extends to this organ, and renders its ascertainment difficult. Large in MACLACHLAN.

26. COLORING.

SEVERAL of the metaphysicians were aware, that a person may have very acute vision, and yet be destitute of the power of distinguishing colors; but habit and attention have, as usual, been adduced to solve the difficulty. Observation enables us to prove that those who have a great natural power of perceiving colors, have a large development of that portion of the brain situated under the middle of the arch of the eye-brows, enclosed by the lines 26; whilst those who cannot distinguish minute shades of color have this portion small. Dr. SPURZHEIM mentions, that a large development of it is indicated by an arched appearance in the middle of the eye-brow, and that this sign is found in the portraits of RUBENS, TITIAN, REMBRANDT, SALVATOR ROSA, CLAUDE LORRAINE, &c.; but its large size is also indicated by the projection forwards of this part of the eye-brow, without arching. It presents this appearance in the masks of the late Sir **HENRY RAEBURN**, **WILKIE**, **HAYDON**, and other eminent painters. In the masks of Mr. **JAMES MILNE** and Mr. **SLOANE**, and in the heads of several other gentlemen, who are unable to discriminate colors, this part of the head recedes, so that in some the eye projects beyond it. The faculty gives the perception of color, their shades, harmony, and discord; but the reflecting faculties adapt them to the purposes of painting. It is generally more powerful in women than in men; and, accordingly, some women, as *colorists*, have equalled the masters among men; while, as *painters*, women in general have always been inferior to the other sex. A large endowment of this faculty renders the sight of flowers and enamelled meadows pleasing. It aids the flower-painter, enameller, dyer, and, in general, all who occupy themselves with colors. Its great energy gives a passion for colors, but not necessarily a delicate taste in them. Taste depends upon a perfect rather than a very powerful activity of the faculties. In several oriental nations, for example, the faculty appears, from their love of colors, to be strong, and, nevertheless, they display bad taste in the application of them.—The organ is now considered as established.

Genus III.—INTELLECTUAL FACULTIES WHICH PERCEIVE THE RELATIONS OF EXTERNAL OBJECTS.

27. LOCALITY.

DR. GALL, in his youth, had good eyes; but he could not recognize places where he had formerly been. One of his school-fellows, named SCHEIDLER, possessed the faculty of doing so in a high degree. Without the aid of artificial marks, he retraced in a forest, the bushes in which they had discovered nests. Dr. GALL moulded this individual's head, and observed the part now marked as the organ of Locality largely developed. This gave him the first idea of its function, and he afterwards compared, very extensively, the size of this cerebral portion with the degree of local memory possessed by individuals, and he found them proportionate.

This faculty conduces to the desire for travelling, and constitutes a chief element in the talent for topography, geography, astronomy, and landscape painting. It gives what is called 'coup d'œil,' and judgment of the capabilities of ground. It is necessary to the military draughtsman, and is of great importance to a general in war. The organ is large in the heads of astronomers, as KEPLER, GALILEO, NEWTON, TYCHO BRAHE', DESCARTES; and also of landscape painters, and travellers, as Captain Cook. Dr. Gall mentions that he had observed the organ large in distinguished players at chess ; and he conceives their talent to consist in the faculty of conceiving clearly a great number of the possible positions of the men. Joined with Individuality, Size and Comparison, it gives a genius for geometry. The lower animals possess the faculty and organ ; and display great powers of retracing their way, when removed from their habitations. The instinctive tendency of several species of them to migrate at certain seasons, is inferred to be connected with the periodical excitement of this organ. The frontal sinus occurs occasionally, but not generally, at the seat of Locality. The positive evidence is strong, and the negative irresistible ; the organ is therefore held to be established. It is large in the companion of Gall, Williams, Strath, Douglas; generally moderate in females.

28. NUMBER.

Some individuals, remarkable for their great talent of calculating, excited the attention of Dr. Gall. He found even children who excelled in this faculty. Thus, a boy of thirteen years of age, born at St. Poeltan, not far from Vienna, excelled his school-fellows surprisingly in this respect. He learned with facility a very long series of numbers, performed the most complicated arithmetical calculations from memory, and very soon found their true result. Mr.

Manteli, a counsellor of the Court of Appeals, at Vienna, took a particular pleasure in the solution of arithmetical problems ; and his son of five years of age resembled him in this talent. In this country, Mr. **Zerah Colburn**, and Mr. **George Bidder**, lately exhibited in public a similar talent. In such individuals, the arch of the eye-brow is either much pressed downward, or there is an elevation at the external angle of the orbit. This sign is the result of a great development of the part of the brain situated behind this place. The special function of the faculty seems to be to give the conception of number and its relations. Arithmetic, algebra, and logarithms belong to it ;—but the other branches of mathematics, as geometry, are not the simple results of this faculty. The organ appears large in the portraits of **Euler**, **Kepler**, **Napier**, **Gassendi**, **La Place**, &c. and in **Jedidiah Buxton**, who possessed the faculty in a surprising degree. It is large in **Bidder**, **Humboldt**, **Colburn** ; small in the French M. D. It is held to be established.

It is still doubted whether the lower animals possess this organ and faculty or not.

29. ORDER.

Order supposes a plurality of objects ; but one may have ideas about a number of things and their qualities, without considering them in any order whatever. Every arrangement of external things is not equally agreeable to the mind ; and the disposition to be delighted with order, and distressed by disorder, is not in proportion to the endowment of any other faculty. There are individuals who are martyrs to the love of order, who are distressed beyond measure by the sight of confusion, and highly satisfied when every thing is well arranged. These persons have the organ in question large. The sort of arrangement, however, prompted by this faculty, is different from, although perhaps one element in, that philosophical method which is the result of the perception of the relation of things. The faculty of which we here speak, gives method and order in arranging objects, as they are physically related; but philosophical or logical inferences, the conception of systematizing or generalizing, and the idea of classifications, are formed by the reflecting faculties. Dr. SPURZHEIM mentions, that the Sauvage de l'Aveyron, at Paris, though an idiot in a very high degree, cannot bear to see a chair or any other object out of its place; and as soon as any thing is deranged, he, without being excited to it, directly replaces it. He saw also in Edinburgh a girl, who in many respects was idiotic, but in whom the love of order was very active. She avoided her brother's apartment, in consequence of the confusion which prevailed in it. I have seen remarkable examples both of large development and deficiency of the organ attended with corresponding manifestations; and regard the function as ascertained. At the same time, as the organ is small, and the angle of the frontal bone is contiguous, there is a difficulty in observing it; and it is by extreme cases alone that conviction will be produced. It is large in French M. D.; in DOUGLAS, in Mask named 'order large,' and in HUMBOLDT, the traveller; small in ANNE ORMEROD.—Established.

30. EVENTUALITY.

DR. GALL observed different persons, who, though not always profound, were learned, had a superficial knowledge of all the arts and sciences, and knew enough to be capable of speaking on them with facility;—such men are deemed brilliant in society. He found that, in them, the middle part of the forehead was very prominent, and the anterior inferior part of the brain much developed. He first named the part the organ of the *memory of things*; but, having observed that persons gifted with a great memory of this kind, enjoy, in general, prompt conception, with a great facility in apprehending details; that they have a strong desire for knowledge, and are also frequently fond of teaching; he subsequently gave it the appellation of the *Sense of Things*, '*Sens d'éducabilité*, *de perfectibilité*.' He adds, that persons in whom this organ is large, and in whom the reflecting organs are not equally developed, are prone to adopt new theories, to embrace the opinions of others, and have a great facility in accommodating themselves to the customs, manners, and circumstances with which they are surrounded.

Dr. SPURZHEIM has named the faculty *Eventuality*, the function of which may be considered merely as an existing being; and, as such, it is the proper object of Individuality. But the horse grows from birth to maturity; its lungs play, its blood circulates, its muscles contract; also, it walks, trots, or gallops: these are its *active* phenomena, and of them Eventuality takes cognizance. Individuality seeks the kinds of knowledge indicated by nouns; while Eventuality is conversant with occurrences designated by verbs.

The organ is early and largely developed in children, and the faculty is strongly manifested by them. It is of importance not only in philosophy, but also in the affairs of life. It prompts to investigation by experiments. It greatly aids in producing a talent for all practical business involving details; and hence, to the medical practitioner, the lawyer, and merchant, it is of essential advantage. It is an element in the talent for narration.

This organ is possessed by the lower animals. Dr. GALL considers the faculty in them to produce the capacity for education; and he gives a scale of the heads of animals, from the crocodile and frog to the elephant, with the view of proving that the more this part of the brain is developed in each species, the higher are its natural susceptibilities of being tamed and taught. Dr. SPURZHEIM justly remarks, that this organ does not fill the whole forehead, and that the others situated there, also contribute to the effects observed by Dr. GALL. The observation of the latter, therefore, is deficient in precision, rather than in truth; for this faculty unquestionably adds to the capacity of the lower animals for profiting by instruction, although it is not the sole source of it.

Individuality and Eventuality, both large, communicate to the orator or author that power of observation which enables him to seize objects and incidents presented to his mind, to store them up, and to recall and apply them when required, so as to give substance to his mental productions. The minute enumeration of things and occurrences, which communicates so pleasing an interest, and an air of truth, to the fictitious narratives of Le Sage, De Foe, Dean Swift, and the Author of Waverly, depends chiefly on these powers. When these organs are small, the individual may hear, see, or read many facts, but they make only a faint impression, and soon vanish from the mind. Such a person retains only general ideas; he feels a difficulty in becoming learned, and is not able to command his knowledge without previous preparation.—Established.

31. TIME.

The power of conceiving Time, and of remembering circumstances connected by no link, but the relation in which they stand to each other in chronology, and also the power of observing time in performing music, is very different in different individuals. We have a few observations in evidence of this organ; but the organ is stated as only probable. The special faculty seems to be the power of judging of time, and of intervals in general. By giving the perception of measured cadence, it appears to be the chief source

of pleasure in dancing. It is essential to music and versification. The talent of using tenses properly in composition seems to depend on it. An excellent essay on this faculty by Mr. Simpson, will be found in Phrenological Journal, vol. ii. p. 134.—Probable.
Established

32. TUNE.

The organ of Tune bears the same relation to the ears, as the organ of color does to the eyes. The ear receives the impressions of sounds, and is agreeably or disagreeably affected by them; but the ear has no recollection of tones, nor does it judge of their relations: it does not perceive the harmonies of sound; and sounds, as well as colors, may be separately pleasing, though disagreeable in combination. A great development of the organ enlarges the lateral part of the forehead; but its form varies according to the direction and form of the convolutions. Dr. Spurzheim observes, that in Glück and others, this organ had a pyramidal form; in Mozart, Viotti, Zumsteg, Dussek, Crescentini, and others, the external corners of the forehead are enlarged, but rounded. Great practice is necessary to be able to observe this organ successfully; and beginners should place together two persons whose heads and temperaments have a general resemblance, but one of whom possesses a genius for music, and the other can scarcely distinguish between any two notes,—and mark the difference of their heads. The superior development of the former will be perceptible at a glance. The faculty gives the perception of melody; but this is only one ingredient in a genius for music. Time is requisite to a just perception of intervals,—Ideality, to give elevation and refinement,—Secretiveness and Imitation, to produce expression; and Constructiveness, Form, Weight, and Individuality are requisite besides, to supply mechanical expertness, necessary to successful performance. This combination occurs in Mr. **KALBRENNER**, and other eminent composers and performers. Mr. **W. SCOTT** has published an admirable essay on this subject, in the Phrenological Journal, vol. ii. p. 170.

Dr. **SPURZHEIM** mentions, that the head and skulls of birds which sing, and of those which do not sing, and the heads of the different individuals of the same kind, which have a greater or less disposition to sing, present a conspicuous difference on the place of this organ. The heads of males, for instance, and those of females of the same kind of singing birds, are easily distinguished by their different development. The organ is large in **HAYDEN**, **MACVICAR**; small in **SLOANE**.—Established.

33. LANGUAGE.

A **LARGE** development of this organ is indicated by the prominence and depression of the eyes; this appearance being produced by convolutions of the brain, situated in the posterior and transverse part of the upper orbitary plate, pressing the latter, and with it the eyes, more or less forward, downward or outward, according to the size of the convolutions. If the fibres be long, they push the eye as far forward as the eye-brows; if they are only thick, they push them towards the outer angle of the orbit, and downwards.* The special faculty of this organ is to enable us to acquire a knowledge of, and to give us the power of using, artificial signs or words. Persons who have a great endowment of it abound in words. In ordinary conversation their language flows like a copious stream;—in a speech they pour out torrents. When this organ is large, and those of reflection small, the style of writing or speaking will be verbose, cumbersome, and inelegant; and when this difference is very great, the individual in ordinary conversation is prone to repeat, to the inconceivable annoyance of the hearer, the plainest sentences again and again, as if the matter were of such difficult apprehension, that one telling was not sufficient to convey the meaning. This practice appears to originate in an immoderate power and activity of the faculty of language; so great, that delight is felt in mere articulation, independent of reflection. When the organ is very small, there is a want of command of expression, a painful repetition of the same words, and a consequent poverty of style, both in writing and speaking. The style of that author is generally most agreeable in whom the organs of language and reflection bear a just proportion to each other. If the intellectual powers be very acute and rapid, and Language not in proportion, a stammer in speech is frequently the consequence. Eventuality and Comparison greatly assist this faculty, when applied to the acquisition of foreign languages and grammar. I have observed that boys who are dux in classes for languages, generally have these two organs large, and that this endowment, with moderate language, accomplishes more, in the way of scholarship, than a large development of the latter organ, with a small endowment of the former. Such individuals have a great facility in recollecting rules, as matters of fact and detail, in tracing etymologies, and in discriminating shades of meaning; and the combination alluded to gives them great readiness in using their knowledge, whatever the extent of it may be.

---

* The organ of Form produces only *distance between* the eyes,—without rendering them prominent, or pushing them downwards.

The signification of words is learned by other faculties: for example, this faculty may enable us to learn and remember the word Melody; but if we do not possess the faculty of Tune, we can never appreciate the meaning attached to that term by those who possess that faculty in a high degree. This principle removes an apparent difficulty that sometimes presents itself. A person with a moderate organ of Language will sometimes learn songs, poetry, or particular speeches by heart, with considerable facility and pleasure; but in all such cases, the passages so committed to memory will be found highly interesting to his other powers, such as Ideality, Causality, Tune, Veneration, Combativeness, Adhesiveness; and that the study and recollection of pure vocables is to him difficult and disagreeable. To a person, on the other hand, in whom the organ is decidedly large, pure words are interesting, and he can learn them without caring much about their meaning. Hence, also, a person with a moderate organ of language, and good reflecting organs, may, by perseverance, learn languages, and attain to proficiency as a scholar; but he will not display copiousness, fluency, and richness of expression in his style, either in his own, or in a foreign tongue.—Large in companion of GALL, Sir J. E. SMITH, HUMBOLDT, VOLTAIRE; small in FRASER.—Established.

FUNCTIONS OF INDIVIDUALITY, DISTINCT FROM THOSE OF THE OTHER KNOWING FACULTIES.

IN the preceding pages, it is stated, that the faculty of Form perceives the forms of objects;—Coloring their color;—Size their dimensions; and that Individuality takes cognizance of existences in general. The question naturally occurs, If the minor knowing powers apprehend *all* the separate qualities of external objects, what purpose does Individuality serve in the mental economy? Its function is to form a single intellectual conception out of the different items of information communicated by the other knowing faculties. In perceiving a tree, the object apprehended by the mind is not color, form, and size, as separate qualities; but a *single thing* or *being*, named a tree. The mind having, by means, of Individuality, obtained the idea of a tree, as an individual existence, may analyze it, and resolve it into its constituent parts of form, color, magnitude; but the contemplation of it in this manner is at once felt to be widely different from the conception attached to the word Tree as a whole. The function of Individuality, therefore, is to embody the separate elements furnished by the other knowing faculties into one, and to produce out of them conceptions of aggregate objects as a whole; which objects are afterwards viewed by the mind as individual existences, and are remembered and spoken of as such, without thinking of their constituent parts. Children early use and understand abstract terms, such as tree, man, ship; and the organ of Individuality is prominently developed in them.

Farther; Form, Color, and Size, furnish certain elementary conceptions, which Individuality unites and conceives, as the being called a Man. The faculty of Number called into action gives the idea of plurality; that of Order furnishes the idea of gradations of rank and arrangement. Now, Individuality, receiving the intimations of all these separate faculties, *combines* them again, and contemplates the *combination* as an *individual object*, and this is an *army*. After the idea of an army is thus formed, the mind drops the recollection of the constituent parts, and afterwards thinks of the *aggregate only*, or of the combined conception formed by Individuality; and regards it as a single object.

It is interesting to observe the Phrenological System, which at first sight appears rude and unphilosophical, harmonizing thus simply and beautifully with Nature. Had it been constructed by imagination or reflection alone it is more than probable that the objection of the minor knowing faculties rendering Individuality superfluous, would have appeared so strong and unsurmountable, as to have insured the exclusion of one or the other as unnecessary; yet, until both were discovered and admitted, the formation of such terms as those we have considered, was altogether inexplicable.

Genus. IV.—REFLECTING FACULTIES.

THE intellectual faculties which we have considered, give knowledge of objects and their qualities, and of events; those to which we now proceed, produce ideas of relation, or reflect. They minister to the direction and gratification of all the other powers, and constitute what we call Reason or Reflection.

34. COMPARISON.

DR. GALL often conversed on philosophical subjects with a *sçavant*, possessing much vivacity of mind. Whenever the latter was put to difficulty in proving rigorously his positions, he had always recourse to comparison. By this means he in a manner painted his ideas, and his opponents were defeated and carried along with him, effects which he could never produce by simple argument. As soon as Dr. GALL perceived that, in him, this was a characteristic trait of mind, he examined his head, and found an eminence of the form of a reversed pyramid in the upper and middle portion of the frontal bone. He confirmed the observation by many subsequent instances. He names it 'perspicacity, sagacity, *esprit de comparaison*.'

The faculty gives the power of perceiving resemblances, similitudes and analogies. Tune may compare different notes; Color contrast different shades; but Comparison may compare a Shade and a Note, a Form and a Color, which the other faculties by themselves could not accomplish. This faculty prompts to reasoning, but not in the line of necessary consequence. It explains one thing by comparing it with another; and those in whom it is predominant are in general more ready and plausible than sound in their inferences. It gives 'ingenuity in discovering unexpected glimpses and superficial coincidences, in the ordinary relations of life;' and great power of illustration. It is the largest organ in the forehead of the late Right Honorable WILLIAM PITT. In popular preachers it is generally fully developed. It is more rarely deficient than any other intellectual organ; and the Scripture is addressed to it in a remarkable degree, being full of analogies and comparisons. It prompts to the invention and use of figurative language; and the speech of different nations is more or less characterized by this quality, according to the predominance of the organ. Dr. MURRAY PATTERSON mentions, that the Hindostanee language abounds in figures, and that Comparison is larger than Causality in the heads of the Hindoos in general. From giving power of illustration and command of figures, it is of great importance to the poet, and it aids Wit also by suggesting resemblances. It is the origin of proverbs; which, in general, convey instruction under figurative expressions. It does not determine the kinds of comparison to be used; for every one must choose his analogies from his knowledge, or from the sphere of activity of his other faculties. He who has Locality in a high degree will thence derive his examples; while another, in whom Form predominates, will illustrate from it.

It was doubted whether this faculty gives also the power of discriminating differences; and in former editions of this work, this talent was ascribed to Wit. Dr. SPURZHEIM, however, observes, that perception of resemblances is the lower, and of differences, the higher, degrees of the present faculty; just as perception of harmony in sounds requires a lower degree of the musical faculties, and that of discords a higher. An eminent endowment of Tune is requisite to discriminate the minutest discords, whereas an ordinary capacity may recognize harmony, and experience pleasure from it; and the same rule he conceives to apply to Comparison. Mr. HEWETT WATSON, in an ingenious essay, published in the Phren. Jour. Vol. vi. p. 389, states the opinions that the primitive function of this organ is to take cognizance of the *condition* in which beings and inanimate objects exist; and that it compares conditions, just as Coloring compares tints, and Tune compares sounds. He proposes to name it Conditionality.

The organ is large in RAPHAEL, ROSCOE, EDWARDS, PITT, HENRI QUATRE, BURKE, CURRAN, Mr. HUME, Hindoos; deficient in Charibs.—Established.

35. CAUSALITY.

INDIVIDUALITY and Comparison take cognizance of things obvious to the senses. Causality looks a little farther than these, and perceives the dependence of phenomena. It furnishes the idea of causation, as implying something more than mere juxta-position or sequence,—and as forming an invisible bond of connexion between cause and effect. It impresses us with an irresistible conviction, that every phenomenon or change in nature is caused by something, and hence, by successive steps, leads us to the First Cause of all. In looking at the actions of men, it leads us to consider the motives or moving causes, from which they proceed. Eventuality judges of direct evidence, or facts ; Causality of circumstantial evidence, or that by inference. In a trial, a Juryman, with large Eventuality and small Causality, will have great difficulty in convicting on circumstantial evidence. He in whom Causality is large, will often feel that kind of proof to be irresistible. It induces us, on all occasions, to ask, Why, and wherefore, is this so ? It gives deep penetration, and the perception of logical consequences in argument. It is large in persons who possess a natural genius for metaphysics, political economy, or similar sciences. When greatly larger than Eventuality and Comparison, it tends to vague generalities of speculation altogether inapplicable to the affairs of life ; and hence those in whom it predominates are not calculated to shine in general society. Their sphere of thought is too abstract to be reached by ordinary minds: they feel this, and remain silent; and hence are reputed dull, heavy, and even stupid. A great defect of the organ renders the intellect superficial, and unfits the individual for forming comprehensive and consecutive views, either in abstract science or business. Coincidence only, and not Causation, is then perceived in events. Such persons are often admirably fitted for common situations, or for executing plans devised by profounder intellects; but, if they are entrusted with the duties of legislators, or directors in any public affair, embracing Causation, it is difficult to make them comprehend the natural dependencies of things, and to act according to them. Blind to remote consequences, they stigmatize as visionary all intellectual perceptions which their own minds cannot reach; they reject principle as vain theory; are captivated by expedients, and represent these as the beau ideal of practical wisdom.—The organ appears largely developed in the portraits and busts of BACON, LOCKE, FRANKLIN, KANT, VOLTAIRE, PLAYFAIR, Dr. THOMAS BROWN; and in the masks of HAYDON, FRANKLIN, BURKE, BRUNELL, WILKIE; moderate in PITT, Sir J. E. SMITH; and very deficient in Charibs and New Hollanders. It is larger in the English and Germans in general than in the French. —Established.

36. Inference

The power of drawing conclusions from given premises. Established

ADAPTATION OF THE EXTERNAL WORLD TO THE INTELLECTUAL FACULTIES OF MAN.

The human mind and the external world, having emanated from the same Creator, ought, when understood, to be found wisely adapted to each other; and this accordingly appears, in an eminent degree, to be the case. If the reader will direct his attention to any natural or artificial object, and consider, 1*st*, Its existence; 2*d*, Its form; 3*d*, Its Size, 4*th*, Its weight; 5*th*, Its locality, or relations in space to other objects; 6*th*, The number of its parts; 7*th*, The order of physical arrangement of its parts; 8*th*, The changes which it undergoes; 9*th*, The periods of time which these require; 10*th*, The analogies and differences between the individual under consideration and other individuals; 11*th*, The effects which it produces; and, *lastly*, If he will designate this assemblage of ideas by a name, he will find that he has obtained a tolerably complete notion of the subject.

This order ought to be followed in teaching the sciences. Botany and Mineralogy are rendered intolerably tedious and uninteresting to many persons, who really possess sufficient natural talents for studying them, by names and classifications being erroneously represented as the chief *ends* to be attained. A better method would be, to make the pupil acquainted with his own mental powers, to furnish him with experimental knowledge,—that these stand in definite relations to external objects, and feel a positive pleasure in contemplating them. His attention ought then to be directed to the existence of the object, as in itself interesting to Individuality ; to its form, as interesting to the faculty of Form ; to its color, as pleasing to the faculty of Color ; and so on with its other qualities ; while the name, order, genus, and species, ought to be taught in the last place as merely designative of the qualities with which he has become conversant. Practice in this mode of tuition will establish its advantages. The mind which, unexercised, regarded all forms, not extravagantly ugly or beautiful, with indifference, will soon experience delight in discriminating minute degrees of elegance and expression ; and the same effect will be produced by following a similar process of cultivation in regard to the other powers. The larger the organs the greater will be the delight ; but even with a moderate development much may be attained. Nor is it necessary to resort to schools and colleges for this exercise of the intellect. Objects of nature and art every where surround us, calculated to stimulate our faculties ; and if the reader, as he walks in the country or in the town, will actively apply his various powers in the manner now pointed out, he will find innumerable sources of pleasure within his reach, although he should not know scientific names and classifications.

MODES OF ACTIVITY OF THE FACULTIES.

All the faculties, when active in a due degree, produce actions good, proper, or necessary. It is excess of activity which produces abuses; and it is probable that Phrenology has been discovered only in consequence of some individuals, in whom particular organs were very largely developed, having yielded to the strongest propensities of their nature. The smallness of a particular organ is not the cause of a faculty producing abuses. Although the organ of Benevolence be small, it does not produce cruelty; but its deficiency may lead to the omission of duties, as it will be accompanied with indifference to the miseries of others. When one organ is small, abuses may result from another being left without proper restraint. Thus large organs of Acquisitiveness and Secretiveness, combined with a small organ of Conscientiousness, and weak reflecting faculties, may produce theft. Powerful organs of Combativeness and Destructiveness, with a small organ of Benevolence, may produce cruel and ferocious actions.

Every faculty, when in action, from whatever cause, produces the kind of feeling, or forms the kind of ideas, already explained as resulting from its natural constitution.

The faculties which produce PROPENSITIES and SENTIMENTS cannot be excited to activity, directly, by a mere act of the will. For example, we cannot conjure up the emotions of Fear, Compassion, or Veneration, by merely willing to experience them. These faculties, however, may enter into action from an internal excitement of the organs; and then the desire or emotion which each produces will be experienced, whether we wish to experience it or not. Thus the cerebellum, being active from internal causes, produces the usual feeling; and this cannot be avoided if the organ be excited. We have it in our power to permit or restrain the manifestation of it in action; but we have no option, if the organ be excited, to experience, or not to experience, the feeling itself. The case is the same with the organs of Fear, Hope, Veneration, and the others. There are times when we feel involuntary emotions of fear, or hope, or awe, arising in us, for which we cannot account; and such feelings depend on the internal activity of the organs of these sentiments.

> "We cannot Nature by our wishes rule,
> Nor, at our will, her warm emotions cool."
>
> CRABBE.

In the *second* place, these faculties may be called into action independently of the will, by the presentment of the external objects fitted by nature to excite them. When an object in distress is presented, the faculty of Benevolence starts into activity, and produces the feelings which depends upon it. When an object threatening danger is presented, Cautiousness gives an instantaneous emotion of fear. And when stupendous objects are presented, Ideality inspires with a feeling of sublimity. In all these cases, the power of acting, or of not acting, is completely dependent on the will; but the power of feeling, or of not feeling, is not so.

In the *third* place, the faculties of which we are now speaking, may be excited to activity, or repressed, *indirectly* by an effort of the will. Thus the knowing and reflecting faculties have the function of forming ideas. Now, if these faculties be employed to conceive internally the objects fitted by nature to excite the propensities and sentiments, the latter will start into activity in the same manner, but not in so powerful a degree, as if their appropriate objects were externally present. The vivacity of the feeling, in such cases, will be in proportion to the strength of the conception, and the energy of the propensities and sentiments together. For example, if we conceive inwardly an object in distress, and Benevolence be powerful, compassion will be felt, and tears will sometimes flow from the emotion produced. In like manner, if we wish to repress the activity of Ideality, we cannot do so merely by willing that the sentiment be quiet; but if we conceive objects fitted to excite veneration, fear, pride, or benevolence, the organs of these feelings will then be excited, and Ideality will sink into inactivity. N. L. If the organ of any propensity or sentiment enter into vigorous activity from internal causes, it will prompt the intellectual faculties to form conceptions fitted to gratify it.

If Cautiousness predominate in activity, the inward thoughts will be directed to dismal objects; if Benevolence be active, the conceptions will be of plans for removing distress; if Veneration glow with energy, the thoughts will be of religion ; if Acquisitiveness predominate, ideas will be formed of plans for saving and accumulation ; if Ideality be supreme, the thoughts will be of splendid scenes, superior to known realities.

As the faculties of the Propensities and Sentiments do not form Ideas, and as it is impossible to excite or recall the feelings or emotions produced by them, directly, by an act of the will, it follows that these faculties have not the attributes of Perception, Conception, Memory, Imagination : they have the attribute of Sensation alone ; that is to say, when they are active, a sensation or emotion is experienced. Hence Sensation is an accompaniment of the activity of all the faculties which feel, and of the nervous system in general ; but sensation is no faculty in itself.

The laws of the KNOWING and REFLECTING faculties are different : these faculties form Ideas, and perceive Relations ; they are subject to the will, or rather constitute will themselves ; and they minister to the gratification of the other faculties, which only feel.

1*st*, These faculties may be active from internal causes, and then the kinds of ideas which they are fitted to form, are presented involuntarily to the mind. The musician feels the notes flowing from him uncalled for. A man in whom Number is powerful and active, calculates by a natural impulse. He in whom Form is powerful, conceives figures by internal inspiration. He in whom Causality is powerful and active, reasons, while he thinks, without an effort. He in whom Wit is powerful and active, feels witty conceptions flowing into his mind spontaneously, and even at times and places when he would wish them not to appear.

2dly, These faculties may be excited by the presentment of the external objects fitted to call them into activity; and,

3dly, They may be excited to activity by an act of volition.

When excited by the presentment of external objects, the objects are perceived, and this act is called PERCEPTION. Perception is the lowest degree of activity of these faculties; and, if no idea is formed when the object is presented, the individual is destitute of the power of manifesting the faculty, whose function is to perceive objects of that kind. Thus, when tones are produced, he who cannot perceive the melody of them, is destitute of the power of manifesting the faculty of Tune. When the steps of an argument are logically and distinctly stated, he who cannot perceive the relation betwixt the steps, and the necessity of the conclusion, is deficient in the power of manifesting the faculty of Causality; and so on. Thus, Perception is a mode of action of the faculties which form ideas, and implies the lowest degree of activity; but perception is no separate faculty.

When these faculties are excited by an act of the Will, the ideas which they had previously formed are recalled. This act is named MEMORY, and it is the *second degree of activity* of each of these faculties, but is no faculty itself. Tune remembers music: Individuality, things that exist.

Dr. Watts seems to have anticipated, by a very acute conjecture, the real philosophy of Memory.

He says, 'It is most probable, that those very fibres of the brain which assist at the first idea or perception of an object, are the same which assist also at the recollection of it, and then it will follow, that the Memory has no special part of the brain devoted to its own service, but uses all those in general which subserve our sensation, as well as our thinking and reasoning powers.'*

Memory, in the philosophical sense, implies the notion of past time. This would be supplied by the faculty of Time, acting in combination with the particular faculties which first perceived, and which, in consequence, serve to recall the past event. Thus, individuality, recalling circumstances, without the notion of Time, would produce conception only; if the idea of past time were added, it would be Memory.

When the faculties are powerfully active, from internal excitement, whether by the Will, or from natural activity, the ideas they have previously formed are vividly and rapidly conceived, and the act of forming them is styled CONCEPTION or IMAGINATION. Where conceptions of absent external objects become vivid and permanent, through disease of the organs, the individual believes in the actual presence of the objects, and is deluded by phantoms or visions. This is the explanation of the cases cited in Dr. HIBBERT's work on Apparitions. Disease of the organ of Wonder contributes especially to this effect. The train of ideas which is constantly flowing through the mind, depends on the internal activity of the faculties and organs, and not on bonds of association betwixt ideas themselves. When the faculties are vigorous and active, the succession is rapid; when weak and inactive, it is slow. During profound sleep, when the organs are entirely at rest, it ceases altogether. Conception and imagination, therefore, are not faculties themselves, but result from the *third degree of activity* of every faculty which forms ideas.

---

* **Improvement of the Mind, p. 18.**

And, lastly, JUDGMENT, in the philosophical sense, belongs to the reflecting faculties alone. The knowing faculties may be said, in one sense, to judge; as, for example, the faculty of Tune may be agreeably or disagreeably affected, and, in this way, may be said to judge of sounds ; but judgment, in the proper sense of the word, is a perception of relation, or of fitness, or of the connexion betwixt means and an end, and it belongs to a class of faculties, entirely separate, viz. the reflecting faculties. These faculties have perception, memory, and imagination also. He who possesses them powerfully, perceives and conceives, remembers and imagines, processes of deduction, or ideas of abstract relations, with great facility.

PRACTICAL JUDGMENT in the affairs of life depends on a harmonious combination of *all* the organs, particularly, of the propensities and sentiments, in just proportions. In order to act rightly, it is as necessary to feel correctly as to reason deeply.

On these principles we are able to explain why individuals may manifest a great power of perception, memory or imagination, and little judgment. If the several *knowing* faculties be vigorous in an individual, he will be capable of manifesting those powers in an eminent degree ; while, if he be deficient in the faculties which reason, he will be weak in philosophic judgment; and although he possesses a splendid intellectual development, if he be deficient in the organs of the propensities and sentiments, he will be defective in practical judgment.

ATTENTION is not a faculty of the mind, but merely consists in a vivid application of the faculties which form ideas. Unless a faculty be possessed, the objects of which it takes cognizance cannot be attended to by an effort of the will. Individuality and Eventuality give the talent for observation, which is often named Attention. The intellectual powers are greatly assisted in producing attention by Concentrativeness and Firmness.

ASSOCIATION.—The metaphysicians conceive that our thoughts follow each other in an established order of succession, and have attempted to find out the causes of it, and the circumstances which determine the order. By reflecting on their own consciousness, they have endeavored to discover laws regulating the succession of ideas in mankind in general. Such an attempt appears to the phrenologist to be opposed by impossibility. If we place a number of persons on a hill-top, say Arthur Seat, overlooking a champaign country, an arm of the sea, and a great city,—one in whom Ideality predominates, will be enchanted with the beauty and magnificence of Nature; one in whom Acquisitiveness is the leading propensity, will think of the profits of the farms, ships, and works, whose elevated chimneys throw clouds of smoke into the air; one in whom Constructiveness prevails, will attend to the lines of the roads, and the architecture of the buildings; one in whom Benevolence and Veneration predominate, will think of the sources of enjoyment spread out before him, and feel gratitude and reverence spontaneously rising in his soul, to an all-bountiful CREATOR. Now, a metaphysician, who has also visited Arthur Seat, expects, by reflecting on the ideas which the recollection of it calls up in his own mind, to discover laws of association that will enable him to judge of the ideas which will present themselves to the minds of all the other persons here supposed, on its being mentioned in their presence. This expectation, however, is clearly vain; because, the original impressions received by each individual, differed widely from those experienced by the others, and when the scene is recalled, the associated feelings and ideas of each must clearly be those which his peculiar mind formed at the first aspect of the scene.

Association, therefore, expresses only the mutual influence of the faculties. Thus, although the organ of Causality is not the only one which perceives the relation of necessary consequence, it may act in association, or combination, with Comparison, furnishing illustrations to render the argument clear,—with Ideality, infusing magnificence and enthusiasm into the conceptions,—with Tune and Imitation modulating the voice, and giving vivacity to the gestures; and the result will be the manifestation of splendid oratory. Associations may be formed, also, betwixt faculties and *signs*. For example: *Nature* has established an association betwixt the external appearance of misery and the faculty of benevolence; so that, on the presentation of the appearance, the faculty enters into activity, and generates the emotion of pity. She, in like manner, has connected the faculty of Tune with the impression called Sounds, by a link of such a kind, that a certain sound produces a certain feeling and perception. She has associated the faculty of Wit with external objects; so that, on the presentation of certain circumstances, instantaneous laughter is excited. On this association natural language is founded. The sign requires only to be presented, and it is understood in all countries, and by all nations.

But mankind possess likewise the power of inventing and establishing arbitrary signs, to express particular inward feelings, or particular conceptions. For example: The words Love, Compassion and Justice, are mere conventional signs, by which we, in Britain, agree to express three different internal feelings or sentiments of the mind; but there is no natural connexion whatever betwixt the signs and the things signified.

Now, the way in which we learn the signification of these signs is this. Show us a person in a rage, and express his state of mind by the word 'Rage,' and afterwards, every time the term is used, we understand it to mean that state of excitement of the mind. In the same way, point out the object I now write upon, and call it a *Table*, and when the word is again mentioned, I conceive the thing signified by it. Hence, to be able to comprehend the meaning of a word, we must be able to feel the propensity or sentiment, or to form the conception of which it is the sign. A child of three years old, is unable to conceive the meaning of the word Abstraction; because, at that age, he has not the power of forming abstract ideas. But he can conceive the meaning of the word Table, because he is then quite able to form a conception of that piece of furniture when presented to him. A person, who is deficient in the faculty of Tune, can never conceive fully what we mean by the word Melody.

The human mind is so constituted, that any *indifferent* object may be selected and used as the arbitrary sign of any propensity, feeling or conception whatever. I say *indifferent;* for if the object stands already in a natural relation to any faculty, it cannot be made the arbitrary sign of an emotion of an opposite faculty. For example: We might, by a mutual understanding, constitute a square figure, thus □, the artificial sign of the emotion termed Rage. After the agreement was understood, that figure would suggest the idea to us, just as well as the letters R, a, g, e, which are mere forms placed in a certain order. But if we were whimsical enough to make the figure of a sweet and smiling countenance, which likewise is merely a species of form, the sign of that emotion, we could never, by any efforts, come to associate the idea of rage with that figure, with facility; for it stands already in the situation of the natural sign of emotions entirely opposite.

In the same way, we might associate feelings of veneration, pity, affection, or grief, with soft and slow notes of music; because these notes, which themselves excite emotions of a specific kind, may become arbitrary signs of any other feelings of a *homogenous kind,* which we please to attach to them. But no association could ever be formed, by which soft, slow, and delicate tones could become the artificial signs of violent rage, jealousy and fury; because the *natural* character of such notes is directly opposite to the natural character of such feelings.

The circumstance of an object being already the natural sign of a propensity, sentiment or conception of a certain kind, appears to be the only limit to our power of associating with it propensities and conceptions of every other description, so as to make the artificial signs suggest the feeling or conception signified, to those who are acquainted with the convention.

The rapidity or vivacity with which a feeling or conception is excited on presentation of the sign, will be in proportion to the natural perfection of the organs and the degree in which they have been exercised, but not in proportion to *either* of these circumstances singly.

If the foregoing views be sound, the principles of association must be sought for in the constitution of the faculties, and not in the relations of particular ideas. In using association, therefore, as an instrument of artificial memory, we ought to keep always in view, that every individual will associate, with greatest facility, ideas with those things which he has the greatest natural facility in perceiving. For example: He who has Number most powerful, will associate words most easily with numbers; he who has Form most powerful, will associate words most easily with forms; he who has Locality most powerful, will associate words most easily with space; and he who has Tune most powerful, will associate words most easily with musical notes.

Hence, also, the influence of Association on our Judgment is easily accounted for. He in whom Veneration is powerful, and to whom the image of a saint has been from infancy presented as an object to be venerated, experiences an instantaneous and involuntary emotion of awe and respect, every time the image is presented to him, or a conception of it formed, because it is now a sign which excites in him that feeling, and the latter excludes the reflecting faculties from performing their functions. Hence, until we can break this association, and prevent the conception of the image from operating as a sign to excite the faculty of Veneration into activity, we shall never succeed in bringing his understanding to examine the real attributes of the object itself, and to perceive its want of every quality that ought justly to be venerated. In the same way, when a person is in Love, the perception or conception of the object beloved stirs up the faculties which feel, into such vivid emotion, and that emotion is so delightful, and the mind has so little consciousness of the real source of the fascination, that it is impossible to make the lover see the object with the eyes of a disinterested spectator. If we could once break the association betwixt the object and the faculties which feel, the reflecting faculties would then perform their functions faithfully, and the object would be seen in its true colors. But, while we are unable to break this link, and to prevent this fascination, we may reason *ad sempiternam*, and our conclusions will never appear to be sound, because the premises, that is, the appearance of the object will never be the same to the party most interested in the argument, and to us.

Thus the associations which mislead the judgment, and perpetuate prejudices, are associations of words and things with *feelings* or *sentiments*, and not associations merely of ideas with ideas. The whole classes of ideas formed by the knowing and reflecting faculties, may be associated *ad infinitum*, and if these ideas do not become linked with the propensities and sentiments, no moral prejudices will arise. Ideas of form, color, order, and impressions of melody, may be associated in ten thousand ways, and faults in taste may perhaps be the consequence ; but unless the association embrace feelings and sentiments also, what is called the Heart, in common speech, is not misled.

PLEASURE and PAIN, and also JOY and GRIEF, are affections of the mind arising from the exercise of every faculty. Every faculty, when indulged in its natural action, feels pleasure ; when disagreeably affected, feels pain; consequently the kinds of pain and pleasure are as numerous as the faculties. Hence one individual in whom Benevolence is large, delights in generously pardoning offences; and another, in whom Destructiveness, and Self-Esteem predominate feels pleasure in taking revenge. One in whom Acquisitiveness is large, is happy in the possession of riches, and another, in whom Veneration and Conscientiousness predominate, glories in disdaining the vanity of mankind. Thus pain and pleasure result from, but do not generate, the faculties.

PASSION is the highest degree of activity of any faculty, and the passions are as different as the faculties: thus a passion for glory is the result of great energy and activity of the faculties of LOVE OF APPRO-

BATION; a passion for money, of ACQUISITIVENESS; a passion for music, of TUNE; a passion for metaphysics, of CAUSALITY. Hence there can be no such thing as *factitious* passions, although such passions are spoken of in various books. Man cannot alter his nature ; and every object that he can desire, must be desired in consequence of its tending to gratify some natural faculty.

SYMPATHY is not a faculty, nor is it synonymous with moral approbation. The same notes sounded by ten instruments of the same kind harmonize, and blend softly together, to form one peal of melody. The cause of this is to be found in the similarity of the constitution and state of the strings. Each faculty of the human mind has a specific constitution; and, in virtue of it, produces specific kinds of feelings, originates or suggests specific kinds of ideas; and wherever similar faculties are active in different individuals, similar feelings are experienced by each, and similarity of feeling is sympathy. Hence he who is under a strong feeling of Destructiveness, will delight to join with others in schemes of devastation. He who strongly feels Veneration will join in adoration with the most glowing fervor. He in whom Benevolence is very active, will join in schemes of charity with a melting soul. He who has powerful Reflecting Faculties, will seek the society of those who reason and reflect. He who has Tune in an eminent degree, will seek the company of those who will gratify it by producing pleasant sounds. He who has the Knowing Faculties most powerful, will seek the company of those who converse, but exercise little reflection;

and the reason of the sympathy in each case is to be found in the similarity of the constitution of the faculties, in the particular individuals who sympathize.

But, in the human mind, the faculties proper to man bear sway over those common to man and brutes; and hence, if one of two individuals have Acquisitiveness strong, and Conscientiousness weak, while the other has Acquisitiveness strong, and Conscientiousness strong also, these two individuals may not sympathize in their modes of gratifying the inferior propensity ; for Conscientiousness will produce feelings of justice in the one, which the other, from the weakness of that faculty, may not experience.

Sympathy is not synonymous with moral approbation. We *approve* of the actions produced by the lower faculties of others, only when these are guided by the faculties proper to man. For example, we never approve of Combativeness, when indulged for the mere pleasure of fighting; nor of Destructiveness, when gratified for the mere delight of being ferocious; nor of Acquisitiveness, when directed to the naked purpose of acquiring wealth. But we approve of the action of all these faculties, when directed by justice and understanding. On the contrary, we approve of the action of the sentiments proper to man, even when unmingled with any other motive. Thus, we approve of Benevolence, from the mere glow of charity ; of Veneration, from the inward feeling of devotion ; of Justice, from the pure dictates of conscientiousness. Indeed, actions done apparently from the impulses of these faculties, lose their character of purity and excellence, in our estimation, in exact proportion to the alloy of the inferior feelings with which we perceive them to be mingled. Kindness, in which we perceive Interest, is always less valued than when pure and unadulterated. Activity in the service of the public loses its merits in our eyes, in exact proportion as we perceive the motive to be the love of approbation, unmingled with conscientiousness and true benevolence.

These facts prove the accuracy of the phrenological doctrine, that the higher faculties are made to govern the lower ; and that man is conscious of feelings, necessary, no doubt, in themselves, but of the gratification of which, when undirected by the superior powers, he himself disapproves. Even the higher sentiments, however, must act comformably to the understanding to be approved of ; and excess of veneration, of benevolence, or of scrupulosity, is always regarded as weakness, just as excess of any lower propensity is regarded as vice.

There are some faculties, also, which, from their constitution, do not sympathize in different individuals in whom they are equally active. Thus two individuals, under vivid and improper impulses of Self-Esteem or Love of Approbation, do not sympathize. Two proud men, or two vain men, repel each other, like similar poles of a magnet. There is something so engrossing in these two faculties, that different individuals, under the unrestrained influence of them, are extremely offensive to each other.

HABIT.—Next to Association, Habit makes the most conspicuous figure in the philosophy of Mr. STEWART ; but in Phrenology it is viewed differently.

Dr. JOHNSON defines habit to be 'a power in man of doing a thing acquired by frequent doing it.' Now, before it can be done at all, the faculty and organ on which it depends, must be possessed in an available degree ; and the more powerful these are, the greater will be the energy with which the possessor will do the thing at first, and the ease with which he will learn to repeat it. GEORGE BIDDER, for example, the celebrated mental calculator, acquired the habit of solving in his mind, without the aid of notation, and in an incredibly short time, the most extensive and intricate questions in arithmetic and algebra. Before he could begin to do so, he required to possess a large organ of Number ; but actually possessing this, and the corresponding mental faculty, he made great and rapid progress in the art, and at seven years established the *habit*, which struck ordinary persons with so much surprise. Other individuals are known, who, possessing a small organ of Number, have labored for years to acquire habits of rapid and correct calculation, but without success. In like manner, a boy who acquires a habit of quarrelling and fighting at school, manifests strong faculties of Combativeness, Destructiveness, and Self-Esteem; and if these were very deficient, he would acquire such a habit with extreme difficulty, if at all. Habit, therefore, is the result of proneness to a certain course of action, acquired by exercise. It is the organ which acquires activity and superior facility in performing its functions, by being properly used, just as the fingers of a musician attain increased rapidity and facility of motion by the practice of playing.

TASTE is the result of the HARMONIOUS ACTION of the faculties generally, in at least a moderate degree of vigor. Thus the most beautiful poetry is that by which gratification is afforded to the higher sentiments and intellectual powers, without the introduction of any impropriety, extravagance, absurdity, or incongruity to offend any one of them. If Ideality is in excess, this produces bombast; if Causality predominates too much, it introduces unintelligible refinements ; if Wit is excessive, it runs into conceits, epigrams, and impertinences. A picture is in best taste when it delights Knowing Faculties, Reflection and the Moral Sentiments, without offending any of them. Thus, if Coloring be too strongly or too weakly exerted, the picture will be defective in taste and its shades ; if Form be weak, it may be out of drawing ; if Ideality and Coloring predominate over Reflection, it may be glowing and striking, but destitute of dignity and meaning. If Language be over-powerful in an individual, his style will be redundant and verbose ; if it be very deficient, it will be dry, stiff, and meagre ; if Individuality be excessive, he may narrate without reflection ; if Reflection be too strong, he will reason without premises or facts ; if the animal propensities predominate, he will be coarse and vulgar ; if intellect be stronger than sentiment, he will be acute and profound, but dry and uninteresting.

EFFECTS OF SIZE AND ACTIVITY IN THE ORGANS, AND PRACTICAL DIRECTIONS FOR OBSERVING DEVELOPMENT.

As 'self-conviction can be obtained only by self-observation,' every one who desires to become a Phrenologist should learn to observe. A healthy brain, at a vigorous period of life, is the proper subject for observation ; and, as the fundamental principle of the science is, that the *power* or *energy* of mental manifestation bears a uniform relation, *cæteris*, *paribus*, to the *size* of the organs, we must be careful not to confound this quality of mind with that of mere *activity* in the faculties ; as size in the organ is an indication of the former, but not at all of the latter.

In physics, power is distinguishable from activity. The balance-wheel of a watch moves with much rapidity ; but so slight is its impetus, that a hair would suffice to stop it : the beam of a steam-engine traverses slowly and ponderously through space ; but its *power* is prodigiously great.

In muscular action, these qualities are recognized with equal facility as different. The grey-hound bounds over hill and dale with animated agility; but a slight obstacle would counterbalance his momentum, and arrest his progress. The elephant, on the other hand, rolls slowly and heavily along ; but the impetus of his motion would sweep away an impediment sufficient to resist fifty grey-hounds at the summit of their speed.

In mental manifestations (considered apart from organization) the distinction between power and activity is equally palpable. On the stage, Mrs. SIDDONS *senior*, and Mr. JOHN KEMBLE were remarkable for the solemn deliberation of their manner, both in declamation and action, and yet they were splendidly gifted with power. They carried captive at once the sympathies and understanding of the audience ; they made every man feel his faculties expanding, and his whole mind becoming greater under the influence of their energies. This was a display of power. Other performers, again, are remarkable for vivacity of action and elocution, who, nevertheless, are felt to be feeble and inefficient in arousing an audience to emotion. *Activity* is their distinguishing attribute, with an absence of power. At the bar, in the pulpit, and in the senate, the same distinction prevails. Many members of the learned professions display great felicity of illustration and fluency of elocution, surprising us with the quickness of their parts, who, nevertheless, are felt to be neither impressive nor profound. They possess acuteness without power, and ingenuity without comprehensiveness and depth of understanding. This also proceeds from activity with little vigor. There are other public speakers, again, who open heavily a debate, their faculties acting slowly, but deeply, like the first heave of a mountain-wave. Their words fall like minute-guns upon the ear, and to the superficial they appear about to terminate ere they have begun their efforts. But even their first accent is one of power ; it rouses and arrests attention : their very pauses are expressive, and indicate gathering energy to be embodied in the sentence that is to come. When fairly animated, they are as impetuous as the torrent, brilliant as the lightning's beam, and overwhelm and take possession of feebler minds, by impressing them irresistibly with a feeling of gigantic power. N. L. The student should always bear in mind that the phrenologist does not compare general size and general power : a man may have a small head, taken in the aggregate, and a powerful intellect ; but it will be found that in him, the anterior lobe or seat of the intellect is large, and that the deficiency lies in the organs of the propensities or sentiments, or of both. In such cases, there will be intellectual vigor without force of character.

In the introduction it is explained, that size, other conditions being equal, is a measure of power. The conditions which most generally modify the effects of size are, 1*st*, Constitution or quality of brain ; 2*dly*, Particular combination of organs ; and, 3*dly*, Exercise.

1*st*, Constitution or quality of brain has a great influence on the mental effects of size ; because the size of two brains may be equal, and, nevertheless, the one may be distinguished by the finest texture and most vigorous constitution, while the other may be inferior in quality, and naturally inert. The consequence will be, that only the best constituted brain will manifest the mind with vigor fully proportioned to its size. That size is, nevertheless, the measure of power, may be proved, by contrasting the manifestations of a smaller brain, equally well constituted with the larger one ; and the power or energy will be found greatest in the latter. The question naturally presents itself, Do we possess any index to constitutional qualities of brain ? The temperaments indicate them to a certain extent.

There are four temperaments accompanied with different degrees of activity in the brain. The first, or *lymphatic*, is distinguishable by a round form of the body, softness of the muscular system, repletion of the cellular tissue, fair hair, and a pale clear skin. It is accompanied by languid vital actions, with weakness and slowness in the circulation. The brain, as a part of the system, is also slow, languid, and feeble in its action, and the mental manifestations are proportionally weak.

The second, or *sanguine* constitution, is indicated by well-defined forms, moderate plumpness of person, tolerable firmness of flesh, light hair, inclining to chestnut, blue eyes, and fair complexion, with ruddiness of countenance. It is marked by great activity of the blood-vessels, fondness for exercise, and an animated countenance. The brain partakes of the general state, and is active.

The *bilious* temperament is recognized by black hair, dark skin, moderate fullness, and much firmness of flesh, with harshly expressed outline of the person. The functions partake of great energy of action, which extends to the brain ; and the countenance, in consequence, shows strong, marked, and decided features.

The *nervous* temperament is recognized by fine thin hair, thin skin, small thin muscles, quickness in muscular motion, paleness of countenance, and often delicate health. The whole nervous system, including the brain, is predominantly active, and the mental manifestations are proportionally vivacious.*

The temperaments are supposed to depend upon the constitution of particular systems of the body; the brain and nerves being predominantly active from constitutional causes, produce the nervous temperament; the lungs, heart, and blood-vessels, being constitutionally active, give rise to the sanguine; the muscular and fibrous systems, to the bilious; and the glands, and assimilating organs, to the lymphatic.

Dr. THOMAS, of Paris, considers, that all the systems of the body act with a degree of energy proportionate to their size, and that the different temperaments owe their origin to the predominance in size of particular systems; for example, the functions of the abdominal viscera is to digest food and nourish the body. If these be large, indicated by a full belly, and if the lungs and brain be relatively small, then the abdominal functions will preponderate, and the individual will resemble the ox in his dispositions: he will eat, digest, and fatten; but be greatly averse from muscular and mental activity. This Dr. THOMAS considers as the origin of the *lymphatic* temperament.

The office of the lungs and heart, which fill the cavity of the thorax, is to invigorate and circulate the blood. When the thorax is large, and the brain and abdomen relatively small, the whole system is pervaded by well-oxygenated blood, vigorously propelled; and hence life and activity are copiously communicated. The abdomen being small, there is no tendency to fat; and the brain being inferior in relative size, there is no strong disposition to thinking. Hence the dispositions will be towards muscular exertion; and pleasure will be felt in mere existence and motion. Among animals the lion, tiger, greyhound, represent this temperament. This constitution is viewed as the cause of the *sanguine* temperament.

---

* Outlines of Phrenology by Dr. SPURZHEIM, p. 3.

The function of the brain is to manifest the mind, when it is large, and the thorax and abdomen small: there will be great mental vivacity, with limited capacity of digestion, and little tendency to muscular action. Individuals so constituted will delight in mental emotion and intellectual pursuits. This is viewed as the origin of the nervous temperament.

The different temperaments are rarely found pure. The common mixtures are the sanguine-lymphatic, the nervous-lymphatic; and the nervous-bilious.

Modifications of temperament, according to Dr. THOMAS's theory, are also frequent. In some persons the brain and thorax are large, and the abdomen small; and then, says he, great mental and muscular activity are combined. This was NAPOLEON's temperament in youth. In other individuals the thorax and abdomen are large, and the brain small; and the consequence is fine animal health; great capacity for bodily exertion; but aversion from mental exertion. Or, the brain, thorax and abdomen may be all large, in the same individual; and then he will be fond of eating and drinking; tolerably active in his muscular functions; and also inclined to vary his occupations by mental exercises.*

Upon the principle before stated, that size is a measure of power, brains may be expected to vary in their general size, in proportion to the degree of mental energy possessed. Our first object, therefore, ought to be to distinguish the size of the brain generally, so as to judge whether it be large enough to admit of manifestation of ordinary vigor; for if it be too small, idiocy is an invariable consequence.

There are several bony eminences on the skull, which do not indicate development of brain; such as the mastoid processes, immediately behind the lowest part of the ear; the crucial spine of the occiput situate below philoprogenitiveness; the zygomatic process extending from the cheek-bones to the temple; and the ridge in the middle line of the coronal surface of the skull, occasioned by the longitudinal sinus. A cast of the skull, with a description of the bones and processes, is sold by O'NEILL and SON.

Our second object should be to ascertain the relative proportions of the different parts, so as to determine the direction in which the power is greatest.

It is proper to begin with the observation of the more palpable differences in size; and the most important object is to ascertain the relative proportions of the animal and moral groups of organs. To accomplish this, a horizontal line ought to be drawn from the middle of Causality to the middle of Cautiousness: all above it belongs to the moral, and all below it to the animal region. The relative breadth as well as height of these regions ought to be attended to.

---

* The American reader will find a very elegant and instructive account of the temperaments, by that distinguished phrenologist, Dr. Charles Caldwell, of Lexington, in a volume published there in 1831, under the title of 'Essays on Malaria and Temperament.'

In judging of the size of the intellectual organs, the portion of brain anterior to Constructiveness and Benevolence should be particularly attended to. For this purpose, a line may be drawn from the anterior margin of Constructiveness to the anterior margin of Benevolence; and in proportion as the brain within these lines projects forward, rises high, and presents a broad surface, will be the vigor of the intellect generally. If, by looking *on profile*, a considerable mass of brain be observed, occupying the lower region of this space, and little in the upper,—this will indicate predominance of the Knowing or Perceptive organs, in other individuals, the upper region will be found larger than the lower, and this will bespeak the reflecting organs stronger than the perceptive. It is of importance to attend to this rule, because sometimes the forehead presents a perpendicular appearance from mere deficiency in the perceptive organs; and, in this way, when viewed in front, it may appear large and broad; whereas, when observed in profile, little brain may be perceived in this region of the head, and in consequence the intellectual manifestations will be vigorous.

In some instances, the greater mass of the brain lies between the ear and the forehead; in others, between the ear and the occiput; and in others, above the ear in perpendicular height. Great differences in breadth are also remarkable,—some being narrow throughout, and some broad. Some are narrow before, and broad behind; and *vice versa.* The busts of the Reverend Mr. M., MARY MACINNES, PALLET, and HAGGART, may be contrasted with this view. If the proportions of the parts differ, so that, in the larger head, the greatest quantity of brain lies in the lateral and posterior regions; and in the lesser head, the preponderance is in the frontal and coronal aspects, the larger head will then, *cæteris paribus*, manifest the greatest energy in the animal propensities, and the smaller one the greatest power in the moral and intellectual faculties. *These higher qualities* may even be more vigorously manifested by the smaller, than by the larger head; because the former, although smaller in its general size, is, in this instance, supposed to be *the larger in these particular regions;*—but, of course, its manifestations of the animal propensities will be greatly inferior in energy to those of the larger head, the size of which is here supposed to lie principally in these organs.

It is necessary to keep in view, that large size may consist in length or breadth, or in both. 'The length of the organ,' says Dr. SPURZHEIM, 'disposes to frequent action, whilst their thickness gives more intensity. Phrenologists attend too little to the latter dimension, and too much to the elongation of the organ.' The length of an organ is ascertained by the distance from the medulla oblongata to the peripheral surface. A line passing through the head, from one ear to the other, would nearly touch the *medulla oblongata,* and hence the external opening of the ear is assumed as a convenient point from which to estimate length. The breadth of an organ is judged of by its peripheral expansion; and it is a general law of physiology, that the breadth of any organ throughout its whole course, bears a relation to its expansion at the surface: the optic and olfactory nerves are examples in point. Hence, if the line from the ear to the forehead be much larger than from the ear backward, and the breadth nearly the same, we infer that the intellectual organs preponderate. If, on the other hand, the forehead is very narrow, as in THURTELL, and the hindhead very broad, we hold the animal organs to predominate, although the length were the same in both directions. Measurement by callipers is useful for ascertaining general size. The following are a few measurements from nature, taken promiscuously from many more in my possession.

Table of Measurement by Callipers.

Males between 25 and 50.	From Occipital Spine to Individuality.	From Occipital Spine to Ear.	From Ear to Individuality.	From Ear to Firmness.	From Destructiveness to Destructiveness.	From Cautiousness to Cautiousness.	From Ideality to Ideality.
1.	7⅝	4⅜	4⅞	5⅞	5⅞	5½	5⅜
2.	6⅝	3½	4⅜	5¾	5⅝	5¾	4¾
3.	8¼	4⅞	5⅜	6½	6½	6	5⅝
4.	7½	4	5	5½	6	5½	5¼
5.	8	4⅞	5¼	6¼	6⅜	6	5¼
6.	8	4¾	4¾	5⅞	5¾	$5\frac{8}{4}$	5⅜
7.	7½	4¼	4¾	5¾	6⅛	5⅞	5½
8.	7½	4¼	4¾	5⅝	5⅞	5½	5⅛
9.	7½	4¼	4⅞	6	5¾	5¾	5⅛
10.	8¼	5	5⅜	5⅞	6¼	5½	5½
11.	7¼	4⅜	5	5⅞	5½	5¼	4¾
12.	7½	4⅜	5	6	5¾	5⅞	4¾
13.	7⅜	4⅛	4¾	5¾	5¾	5¾	5⅜
14.	7⅛	3⅞	4½	5⅝	6¼	5¾	5
15.	7⅜	4⅛	4⅞	6⅛	6	6	5
16.	7⅞	4⅜	5⅜	6	6¼	6⅜	5⅝
17.	7⅞	4½	5⅛	6½	6½	6⅛	5¾
18.	7½	4⅛	5	5⅞	5¾	5⅜	4⅞
19.	8	4¼	5½	6⅛	6	6	4⅞
20.	7	4⅛	4⅝	5⅝	5¾	5¼	4¾
	151⅝	86⅜	99⅛	118½	119⅝	113⅞	103⅜
Total divided by 20 gives average.	7½	4⅜	$4\frac{19}{20}$	$5\frac{18}{20}$	$5\frac{16}{20}$	$5\frac{14}{20}$	$5\frac{3}{20}$

These measurements are taken above the muscular integuments, and show the dimensions of heads in these directions, whence the general size of the head may be inferred; but they are not given as indications of the absolute dimensions of any of the phrenological organs. The callipers are not suited for giving this latter information, for they do not measure from the medulla oblongata, nor do they indicate breadth of fibre. The new craniometer is preferable for ascertaining absolute length, and the breadth may be judged of by means of the hand or eye. The average of these twenty heads will be higher than that of the natives of Britain generally, because there are several large heads among them, and none small.

After becoming familiar with the general size and configuration of heads, and learning to appreciate the proportions which the general mass of the three orders of organs bears to each, the student may proceed to the *observation of individual organs;* and in studying them, the real dimensions, and not the mere prominence of each organ, should be looked for. Practice, with at least an average endowment of the organs of Form, Size, and Locality, are necessary to qualify a person for making observations with success. Individuals whose heads are very narrow across between the eyes, and little developed at the top of the nose, where these organs are placed, experience great difficulty in distinguishing the situations and minute differences in the size of organs. If one organ be much developed, and the neighboring organ very little, the developed organ presents an elevation or protuberance; but if the neighboring organs be developed in proportion, no protuberance can be perceived, and the surface is smooth. The student should learn from books, plates, and casts, or personal instruction, (and the last is by far the best,) to distinguish the *form* of each organ, and its *appearance*, when developed in different proportions to the others. The phrenological bust shows only the *situations* of the organs, and their proportions on *one* head; and it is impossible by it to communicate more information. The different appearances in all the varieties of relative size, must be discovered by inspecting a number of heads; and especially by contrasting instances of extreme development with others of extreme deficiency. No adequate idea of the foundation of the science can be formed until this is done. It is the proportions of the organs to each other in the *same head* that determine the character. In cases of extreme size of single organs, the form delineated in the bust is perceived distinctly standing out in nature.

When one organ is very largely developed, it sometimes pushes a neighboring smaller organ a little out of its place. This may be distinguished by the greatest prominence being near the centre of the large organ, and the swelling extending over a portion only of the other.* The observer should learn, by inspecting a skull, to distinguish the mastoid process behind the ear, and several bony prominences which occur in every head, from elevations produced by development of brain; as also to discriminate bony excrescences sometimes formed by the sutures, when such occur.

---

* In these cases, the *shape* should be attended to; for the form of the organ is then easily recognized, and is a sure indication of the particular one which is largely developed.

The terms used to denote the gradations of size in the different organs, in an increasing ratio, are

Very small
Small
Rather small
Moderate
Rather full
Full
Rather large
Large
Very large.

Captain Ross has suggested, that numerals may be applied with advantage to the notation of development. He uses decimals; but these appear unnecessarily minute. The end in view may be attained by such a scale as the following:—

1.
2. Idiocy
3.
4. Very small
5.
6. Small
7.
8. Rather small
9.
10. Moderate
11.
12. Rather full
13.
14. Full
15.
16. Rather large
17.
18. Large
19.
20. Very large.

The intermediate figures denote intermediate degrees of size, for which we have no names. The advantage of adopting numerals would be, that the values of the extremes being known, we could judge accurately of the dimensions denoted by the intermediate numbers; whereas it is difficult to apprehend precisely the degrees of magnitude indicated by the terms small, full, large, &c. except we have seen them applied by the individuals who use them.

In designating development, Dr. SPURZHEIM mentions only four degrees. He divides the different faculties into orders, as Animal Feelings, Human Feelings, and Intellect. He then mentions what animal organs belong to the first or largest class; what to the second; what to the third; and what to the fourth. He does the same with the organs of the human feelings, and with those of intellect. This presents at once an analysis of the development; but it does not indicate what proportion any organ in one of the orders bears to any organ in another of them. The estimate of the size of each organ in succession, and then the analytic classification followed by Dr. SPURZHEIM, appears to me to be the best method of attaining a complete view.

In observing the *appearance* of individual organs, it is proper to begin with the largest, and select extreme cases. The mask of Mr. JOSEPH HUME may be contrasted with that of Dr. CHALMERS for Ideality. The casts of the skulls of RAPHAEL and HAGGART may be compared at the same part; the differences being equally conspicuous. The cast of the Reverend Mr. M. may be contrasted with that of DEMPSEY, in the Love of Approbation; the former having this organ large and the latter small. Self-Esteem in the latter being exceedingly large, may be compared with the same organ in the skull of Dr. HETTE, in whom Love of Approbation is much larger than Self-Esteem. The organ of Constructiveness in RAPHAEL may be compared with the same organ in the New Holland skulls. Destructiveness in BELLINGHAM may be compared with the same organ in the skulls of the Hindoos; the latter people being in general tender of life. Firmness large, and Conscientiousness deficient in King ROBERT BRUCE, may be compared with the same organs reversed in the cast of the head of a lady, (Mrs. H.,) which is sold as illustrative of these organs.

In proving the *truth* of Phrenology, the same organ is not compared in different species of animals, nor even in different individuals of the same species, because their constitution and exercise may differ; but the size of each organ in proportion to the others *in the head of the same individual* is observed. In the same individual, the constitution of all the organs is generally, but not universally, equal, and the larger organs show more power and activity than the smaller. It is not the *absolute size* of the organs, or their size in reference to any standard head, that determines the predominance of particular talents or dispositions in an individual. Thus in the head of BELLINGHAM, *Destructiveness* is very large, and the organs of the moral sentiments and intellect are small in proportion; and according to the rule, that, *cœteris paribus*, size determines energy, BELLINGHAM'S most powerful tendencies are inferred to have been towards cruelty and rage. In the skulls of several Hindoos, the organ of Destructiveness is small in proportion to the others, and we conclude, that the tendency of such individuals would be weakest towards the foregoing passions. But in the head of GORDON the murderer of the pedlar boy, the absolute size of Destructiveness is less than in the head of RAPHAEL. Although, however, the *absolute* size of the organ is greater in RAPHAEL, he was an amiable man of genius, and GORDON an atrocious murderer. This illustrates the rule now under consideration. In GORDON, the organs of the moral sentiments and intellectual faculties are small, and that of Destructiveness is the largest in the brain; while in RAPHAEL, the moral and intellectual organs are large. On the foregoing principle, the most powerful manifestations of RAPHAEL'S mind ought to have been in the department of sentiment and intellect, and those of GORDON'S mind in Destructiveness and animal passion; and their actual dispositions corresponded. Still the dispositions of RAPHAEL would be characterized by the large size of this organ. It would communicate that warmth and vehemence of temper, which are found only when it is large, although the higher powers would restrain it from abuse.

An objection is frequently stated, that persons having large heads have 'little wit,' while others with small heads are 'very clever.' The Phrenologist never compares mental ability in general with size of brain in general; for the fundamental principle of the science is, that different parts of the brain have different functions, and that hence the *same absolute quantity* of brain, if consisting of intellectual organs, may be connected with the highest genius; while, if consisting of the animal organs, lying immediately above and behind the ears, may indicate the most fearful energy of the lower propensities. The brains of Charibs seem to be equal in absolute size to those of average Europeans, but the chief development of the former is in the animal organs, of the latter in the organs of sentiment and intellect; and no Phrenologist would expect the one to be equal in intelligence and morality to the other, merely because their brains are equal in absolute magnitude.

In the practical application of Phrenology, we may compare different individuals. The first requisite is to see that their temperaments are the same; the second, that the general size of their brains, except in the particular ogans to be compared, is the same; and, thirdly, that the exercise of their powers has been equally attended to. If we observe in one person Tune, Ideality, or Cautiousness very small, and in another the same organ very large, we shall find a corresponding difference in the power of manifestation. It may, however, happen, that, in the same individual, one organ is naturally more active than another, without reference to size ; just as the optic nerve is sometimes more irritable than the auditory ; but this is by no means a common occurrence.

If we take two heads of the same temperament, in sound health, and of similar ages, in each of which all organs are similar in their proportions, but the one of which heads is large, and the other small, then, if the preponderance of power of manifestation is not in favor of the first, Phrenology must be abandoned as destitute of foundation.

In comparing the brains of the lower animals with the human brain, the Phrenologist looks chiefly for the reflected light of analogy, to guide him in his researches, and does not found a direct argument in favor of the functions of the different parts of the human brain, from facts observed in regard to the lower animals ; the reason is, that such different genera of animals are too dissimilar in constitution and external circumstances, to authorize him to draw positive results from comparing them.* Many Philosophers, being convinced that the brain is the organ of mind, and having observed that the brain of man is larger than that of the majority of tame animals, as the horse, dog, ox, have attributed the mental superiority of man to the superiority in absolute size of his brain ; but the Phrenologist does not acknowledge this conclusion as in concordance with the principles of his science. The brain on one of the lower creatures may be very large, and, nevertheless, if it be composed of parts appropriated to the exercise of muscular energy, or the manifestation of animal propensities, its possessor may be far inferior in understanding or sagacity to another animal having a smaller brain, but composed chiefly of parts destined to manifest intellectual power.* Whales and elephants have larger brains than man, and yet their sagacity is not equal to his ; but nobody pretends that in these animals the parts destined to manifest intellect, are larger, in proportion to the convolutions intended to manifest propensity, than in man; and hence the superior intelligence of the human species is no departure from the general analogy of nature.

---

* Dr. Vimont, of Paris, in his work on Human and Comparative Phrenology, has made an admirable and splendid contribution to the science in this department.

In like manner, the brains of the monkey and dog are smaller than those of the ox, ass, and hog ; and yet the former approach nearer to man in regard to their intellectual faculties. To apply the principles of Phrenology to them, it would be necessary to discover what parts manifest intellect, and what propensity, in each species ; and then to compare the power of manifesting each faculty with the size of its appropriate organ. If size were found not to be a measure of power, then, in that species, the rule under discussion would fail ; but even this would not authorize us to conclude, that it did not hold good in regard to man; for human Phrenology is founded, not on analogy, but on positive observations. Some persons are pleased to affirm, that the brains of the lower animals consist of the same parts as the human brain, only on a smaller scale ; but this is highly erroneous. If the student will procure brains of the sheep, dog, fox, calf, horse, or hog, and compare them with the human brain, or the casts of it sold in the shops, he will find a variety of parts, especially in the convolutions which form the organs of the moral sentiments and the reflecting faculties, wanting in those animals.

---

* SPURZHEIM's Physiognomical System, chap. 4.

Size, then, is not the *only* requisite to the manifestation of great mental power ; the brain must possess also a favorable temperament, a healthy constitution, and that degree of activity which is the usual accompaniment of health. Now, the brain, like other parts of the body, may be affected with certain diseases which do not diminish or increase its magnitude, and yet impair its functions ; and, in such cases, great size may be present, and very imperfect manifestations appear ; or it may be attacked with other diseases, such as inflammation, or any of those particular affections whose nature is unknown, but to which the name of Mania is given in nosology, and which greatly exalt its actions ; and then very forcible manifestations may proceed from a brain comparatively small ; but it is no less true, that when a larger brain is excited to the same degree by the same causes, the manifestations become increased in energy in proportion to the increase of size. These cases, therefore, form no valid objection to Phrenology. The Phrenologist ascertains, by previous inquiry, that the brain is in a state of health. If it is not, he makes the necessary limitations in drawing his conclusions.*

---

* See this subject discussed at greater length in Phrenological Journal, No. II. p. 300.

Nature admits of no exceptions, and a single instance of decidedly vigorous manifestations, with a small organ, disease being absent, would overturn all previous observations in favor of that organ: but men are liable to err; and although an individual Phrenologist may have called an organ small, the manifestations of which are powerful, or, *vice versa*, this is not to be precipitately charged against nature as an exception. Chemists occasionally fail in experiments, mathematicians err in demonstration, arithmeticians are wrong in calculations; and, in like manner, Phrenologists may commit mistakes in observing cerebral development. The test in such cases is, to compare the organ in regard to which an apparent discrepancy has occurred, with the same organ in the head of a person whose general temperament, size of brain and cultivation are similar, but whose powers of manifestation, in respect of this particular faculty, are KNOWN to be diametrically opposite. If the organs are not perceived by an ordinary eye to differ, then the exception is proved. I have seen conviction carried home to an opponent, by such an appeal to nature, when he imagined himself sure of a triumph on the score of an error committed by an observer.

If, in each of two individuals, the organs of propensity, sentiment, and intellect, are equally balanced, the general conduct of one may be vicious, and that of another moral and religious. But the question here is not one of *power*, for as much *energy* may be displayed in vice as in virtue; but it is one of *direction* merely. In cases where an equal development of *all* the organs exists, *direction* depends on *external* influences, and then no Phrenologist, by merely observing the size of the organs, pretends to tell to what objects the faculties have been directed.

The *second* cause of *activity* is particular combinations of organs. The largest organ in each head have the greatest, and the smallest the least, tendency to natural activity.

This law of our constitution is of great practical importance. If an individual have an active temperament and large organs, they generate strong desires, sentiments, or intellectual conceptions, involuntarily. If provided with suitable objects, on which they may exert their energies, they conduce to the highest enjoyment, and lay the foundation of the greatest usefulness. If not so provided, they give rise to the most painful emotions. If Love of Approbation be large, it excites an ardent desire of applause ; if no merit be possessed to command esteem, it cannot obtain gratification, and painful dissatisfaction is the consequence. Self-Esteem very large, prompts to the assumption of airs of consequence, and to exaggerated opinions of self, and, when uncontrolled, exposes the possessor to countless mortifications, Combativeness and Destructiveness very large, and undirected, prompt the mind to watch for occasions of offence, and embitter every hour by furious ebullitions. A long train of diseases, in common language styled Nervous affections, result from the mental faculties and organs being unprovided with proper objects on which their activity may be exerted. Unless the brain be very small and constitutionally inactive, occupation must be obtained, otherwise the organs unexercised generate the most painful sensations. Education and literature, as means of directing and occupying the faculties, are of vast importance : when these are not possessed, animal pleasures, or the follies of fashionable life, are resorted to for the sake of excitement.

A certain combination in size, namely, Combativeness, Destructiveness, Hope, Firmness, Acquisitiveness, and Love of Approbation, all large, is commonly attended with activity ; and another combination, namely, Combativeness, Destructiveness, Firmness, and Acquisitiveness, small or moderate, with Hope, Veneration, and Benevolence, large, is frequently accompanied with less activity in the mental character.

The *third* case of *activity* is exercise. Suppose that two individuals possess organs and temperaments exactly similar, but that one is highly educated, and the other left entirely to the impulses of nature ; the former will manifest his faculties with higher *power* than the latter ; and hence it is argued, that size is not in all cases a measure of energy.

Here, however, the requisite of *cæteris paribus* does not hold. An important condition is altered, and the Phrenologist uniformly allows for the effects of education, before drawing positive conclusions.* The objector may perhaps push his argument farther, and maintain, that if exercise thus increases power, it is impossible to draw the line of distinction between energy derived from this cause and that which proceeds from size in the organs, and hence that the real effects of size can never be determined. In reply, it may be observed, that education may cause the faculties to manifest themselves with the highest degree of energy, *which the size of the organs will permit* but that size fixes a limit which education cannot surpass. Dennis, we may presume, received some improvement from education, but it did not render him equal to Pope, much less to Shakspeare or Milton: therefore, if we take two individuals whose brains are equal in temperament and health, but whose organs differ in size, and educate them alike, the advantages in power and attainment will be greatest in the direct ratio of the size, in favor of the largest brain. Thus the objection ends in this,—that if we compare brains in opposite conditions, we may be led into error—which is granted; but this is not in opposition to the doctrine that, *cæteris paribus*, size determines power. Finally—extreme deficiency in size produces incapacity for education, as in idiots; while extreme development, if healthy, combined with an active temperament as in Shakspeare, Burns, Mozart, anticipate its effects, in so far that the individuals educate themselves.

---

* Phren. Trans. p. 308.

+(other things being equal)

In saying, then, that, *cæteris paribus*,+ size is a measure of power, Phrenologists demand no concessions which are not made to physiologists in general, among whom, in this instance, they rank themselves.

The doctrine that size is a measure of power, is not to be held as implying that power as the only, or even the most valuable quality, which a mind in all circumstances can possess. To drag artillery over a mountain, or a ponderous car through the streets of London, we would prefer an elephant, or a horse of great size and muscular power; while, for graceful motion, agility, and nimbleness, we would select an Arabian palfrey. In like manner, to lead men in gigantic and difficult enterprises,—to command by native greatness in perilous times, when law is trampled under foot,—to call forth the energies of a people, and direct them against a tyrant at home, or an alliance of tyrants abroad,—to stamp the impress of a single mind upon a nation,—to infuse strength into thoughts, and depth into feelings, which shall command the homage of enlightened men in every age;—in short, to be a BRUCE, BONAPARTE, LUTHER, KNOX, DEMOSTHENES, SHAKSPEARE, or MILTON, a large brain is indispensably requisite; but to display skill, enterprize, and fidelity, in the various professions of civil life;—to cultivate, with success, the less arduous branches of philosophy;—to excel in acuteness, taste, and felicity of expression;—to acquire extensive erudition and refined manners, a brain of a moderate size is perhaps more suitable than one that is very large; for wherever the energy is intense, it is rare that delicacy, refinement, and taste, are present in an equal degree. Individuals possessing moderate sized brains easily find their proper sphere, and enjoy scope for all their energy. In ordinary circumstances, they distinguish themselves; but sink when difficulties accumulate around them. Persons with large brains, on the other hand, do not readily attain, their appropriate place; common occurrences do not rouse or call them forth; and, while unknown, they are not trusted with great undertakings. Often, therefore, such men pine and die in obscurity. When, however, they attain their proper element, they feel conscious greatness, and glory in the expansion of their powers. Their mental energies rise in proportion to the obstacles to be surmounted, and blaze forth in all the magnificence of genius, when feebler minds would expire in despair.

Men in general willingly obey a person in authority, whose head is large and favorably proportioned; because they feel natural greatness coinciding with adventitious power. If, on the other hand, the head is small, or large only in the organs of the propensities, the individual is felt to be inferior in spite of his artificial elevation, and is opposed, despised, or hated.

Bonaparte, Captain **Parry**, and many others, present a favorable specimen of the former, while, among living men in authority, numerous examples of the latter are also to be met with.

Great general size and great activity combined, constitute the natural elements of the highest genius.

A few practical observations shall now be given, in farther illustration of the principles here expounded.

COMBINATION IN SIZE, OR EFFECTS OF THE ORGANS WHEN COMBINED IN DIFFERENT RELATIVE PROPORTIONS.

The primitive functions of each organ were *discovered*, by observing cases in which it decidedly predominated over, or fell short of, other organs, in point of size; and by similar observations, each must still be verified. After the discovery is established, its practical application deserves attention. Every individual possesses all the organs, but they are combined in different degrees of relative size in different persons; and the manifestations of each are modified, in some degree, by the influence of those with which it is combined.

Three rules may be laid down for estimating the effects of difference in relative size, occurring in the organs of the same brain.

RULE FIRST.—Every faculty desires gratification with a degree of energy proportioned to the size of its organ; * and those faculties will be habitually indulged, the organs of which are largest in the individual.

Examples.—If all the animal organs are large and all the organs of the moral sentiments and intellect small, the individual will be naturally prone to animal indulgence in the highest degree, and disposed to seek gratification in the directest way, and in the lowest pursuits. The Charibs, MARY MACINNES, and BELLINGHAM, are illustrations of this combination, and their manifestations corresponded.

If, on the other hand, the organs of the moral sentiments and intellect greatly predominate, the individual will be naturally prone to moral and intellectual pursuits; such persons are 'a law unto themselves.' The casts of Dr. HETTE, and the Reverend Mr. M. are examples of this combination, and they may be contrasted with the casts last mentioned.

---

* The condition *cæteris paribus*, is always understood, and therefore need not be repeated in treating of the effects of size.

Rule second.—As there are three kinds of faculties, Animal, Moral, and Intellectual, which are not homogeneous in their nature, it may happen that several large animal organs are combined in the same individual with several moral and intellectual organs highly developed. The rule then will be, that the lower propensities will take their *direction* from the higher powers; and such a course of action will be habitually followed, as will be calculated to gratify the whole faculties whose organs are large.

Examples.—If the organs of Acquisitiveness and Conscientiousness be both large, stealing might gratify Acquisitiveness, but it would offend Conscientiousness. According to the rule now stated, the individual would endeavor to gratify both, by acquiring property by lawful industry. If both Combativeness and Destructiveness are large, and Benevolence and Conscientiousness are as fully developed, wanton outrage and indiscriminate attack might gratify the first two faculties, but they would outrage the last two; and hence the individual would seek for situations calculated to gratify all four, and these may be found in the ranks of an army embodied for the defence of his country, or in moral and intellectual warfare waged against the patrons of corruption and abuse in Church and State. Luther, Knox, and many other benefactors of mankind, were probably actuated by such a combination of faculties.

If, in an individual, the Cerebellum is very large, and Philoprogenitiveness, Adhesiveness, and Conscientiousness deficient, he will be prone to the directest gratifications of the animal appetite; if the latter organs are large, he will perceive that wedlock affords the only means of pleasing the whole group of faculties.

If Benevolence, Self-Esteem, and Acquisitiveness are all large, giving charity may gratify the first; but unless the individual be very rich, the act of parting with property may be disagreeable to the two last faculties: he would therefore prefer to gratify Benevolence by doing acts of personal kindness; he would sacrifice time, trouble, influence, and advice, to the welfare of others, but not property. If Benevolence were *small*, with the same combination, he would not give either money or services.

If Love of Approbation large, is combined with large Ideality and moderate reflecting faculties, the individual will be ambitious to excel in the splendor of his equipage, style of living, dress, and rank. If, to the same combination, be added a powerful intellect, and large Conscientiousness, moral and intellectual excellence will be preferred as the means of obtaining the respect of the world.

If Self-Esteem large, is combined with deficient Benevolence, Love of Approbation and Conscientiousness, the individual will be prone to gratify his selfish feelings, with little regard to the good opinion, or the just claims of society. If Self-Esteem large, is combined with large Love of Approbation and Conscientiousness, the former will produce only that degree of self-respect which is essential to dignity of character, and that degree of independence of sentiment, without which even virtue cannot be maintained.

If large Cautiousness is combined with deficient Combativeness, the individual will be extremely timid.

If Combativeness be large, and Cautiousness small, reckless intrepidity will be the result. If Combativeness be equally large with Cautiousness, the individual will display courage regulated by prudence. If Cautiousness, Conscientiousness, Self-Esteem, Secretiveness, and Love of Approbation, are all large, and Combativeness moderate, bashfulness or *mauvaise honte* will be the consequence. This feeling is the result of the fear of not acquitting one's self to advantage, and thereby compromising one's personal dignity.

If Veneration and Hope are large, and Conscientiousness and Benevolence small, the individual will be naturally fond of the act of religious worship, but averse to the practice of charity and justice. If the proportions are reversed, the result will be a natural disposition to charity and justice, with no great tendency to the exercise of devotion. If all the four organs are large, the individual will be naturally inclined to render homage to GOD, and discharge his duties to men. If Veneration large, is combined with large Acquisitiveness and Love of Approbation, the former sentiment may be directed to superiors in rank and power, as the means of gratifying the desires for wealth and influence depending on the latter faculties. If Veneration small, be combined with Self-Esteem and Firmness large, the individual will not naturally look up to superiors in rank.

The intellectual faculties will naturally tend to such employments as are calculated to gratify the predominant propensities and sentiments. If the organs which constitute a genius for painting are combined with large Acquisitiveness, the individual would paint to become rich; if combined with Acquisitiveness small, and Love of Approbation large, he would probably labor for fame, and starve while attaining it.

Talents for different intellectual pursuits depend upon the combinations of the knowing and reflecting organs in certain proportions. Form, Size, Coloring, Individuality, Ideality, Imitation, and Secretiveness, large, with Locality small, will constitute a portrait, but not a landscape, painter. Diminish Form and Imitation, and increase Locality, and the result will be a talent for landscape, but not for portrait painting. If to Individuality, Comparison, and Causality, all large, an equally well developed organ of Language is added, the result will be a talent for authorship or public debate; if the Language be small, the other faculties will be more prone to seek gratification in the business of life, or in abstract philosophy.

The principle of this rule solves cases which often appear inexplicable to superficial observers. In Quaker GEDDES, as drawn by the Author of Waverly, in Redgauntlet, (and many such individuals exist in nature,) Combativeness and Destructiveness are kept in check by the moral sentiments and reflection, so as in no instance to be permitted to repel violence by violence. The question is frequently asked, What, in such cases, becomes of the organs? The answer is, that they are present, and perform their usual functions. The individual in question is represented as full of moral intrepidity and energy of character; and this is the result of Combativeness and Destructiveness, directed by the superior faculties. If these organs were small, those of the higher powers being large, the consequence would be a deficiency in active and energetic qualities of mind. In no instance, therefore, is it a matter of indifference to the dispositions and character of the individual, whether any particular organ be large or small. To estimate the effect produced on the character by a large organ, the manifestations of which appear to be suppressed, we should consider what the result would be if that organ were small, while all the others retained their original proportions.

In like manner, an organ greatly deficient in size cannot be compensated for by other organs, however large. If Conscientiousness be deficient,—although Benevolence and Veneration be large, there may be kindness without justice, and piety without integrity. Some men are too generous to be just, and others make religion a cloak for dishonesty. These characters result from this combination.

Rule third.—Where all the organs appear in nearly equal proportions to each other, the individual, if left to himself, will exhibit opposite phases of character, according as the animal propensities or moral sentiments predominate for the time. He will pass his life in alternate sinning and repenting. If external influence is brought to operate upon him, his conduct will be greatly modified by it; if placed, for instance, under severe discipline, and moral restraint, these will cast the balance, for the time, in favor of the higher sentiments; if exposed to the solicitation of profligate associates, the animal propensities will probably obtain triumphant sway. Maxwell, who was executed for housebreaking and theft, is an example of this combination. In him the three orders of organs are amply developed;—while subjected to the discipline of the army, he preserved a fair reputation; but when he fell into the company of thieves, he adopted their practices, and was hanged.

The principles now laid down remove an objection that has frequently been stated, viz. that, as different combinations modify the manner in which the faculties are manifested, and as the functions of the parts at the base of the brain are still undiscovered, no certainty can be obtained regarding the functions even of the higher parts; because, say the objectors, all the manifestations actually perceived, may be the result of the joint action of the known and unknown parts, and hence it is impossible to determine the specific functions of each. The answer to this objection is, that the function of each organ remains invariable, whatever direction the manifestations may take, in consequence of its acting in combination with other organs. Hence, if we suppose the unknown parts at the base of the brain to be the organs of Hunger and Thirst, as several facts indicate, then Tune combined with these parts large, would produce Bacchanalian songs; if combined with these small, and Veneration large, hymns would be the form of its manifestation; but, in either case, Tune would perform only its primitive function of producing melody.

COMBINATIONS IN ACTIVITY.

WHERE several organs are large in the same individual, they have a natural tendency to combine in activity, and to prompt him to a line of conduct calculated to gratify them all. Where, however, all or the greater part of the organs are possessed in nearly equal proportions, important practical effects may be produced, by establishing Combinations in activity among particular organs, or groups of organs. For example, if Individuality, Eventuality, Ideality, Causality, Comparison and Language be all large, they will naturally tend to act together, and the result of their combined activity will be a natural talent for public speaking, or literary composition. If Language be small, it will be extremely difficult to establish such a combination in activity, and these natural talents will be deficient: but if we take two individuals, in both of whom this group of organs *is of an average size*, and if we train one of them to a mechanical employment, and the other to the bar; in the latter, the reflecting organs and that of Language will be trained to act together, and the result will be an acquired facility in writing and debate; whereas, in the former, in consequence of the organ of Language never being accustomed to act in combination with those of intellect, this facility would be wanting. On the same principle, if a person, having an excellent endowment of the organs of propensity, sentiment, and intellect, were introduced for the first time into higher society than that in which he had been accustomed to move, it might happen that he would lose for a moment the command of his faculties, and exhibit an unhappy specimen of awkwardness and embarrassment. This would arise from irregular and inharmonious action in the different faculties and organs: Veneration, powerfully excited, would prompt him to manifest profound respect; Love of Approbation would inspire him with a strong desire to exhibit a pleasing and becoming appearance; Cautiousness would produce alarm, lest he should fail in any essential of good breeding; Self-Esteem would feel compromised by the embarrassment stealing on the mind; and the intellect, distracted by these conflicting emotions, would be unable to regulate the conduct according to the rules of propriety. When familiarized with the situation, the sentiments would subside into a state of more harmonious action: the intellect would assume the supremacy; and then the individual might become the idol and ornament of the circle in which he had made so awkward a *debut.*

It is in virtue of this principle that education produces its most important effects. If, for instance, we take two individuals, in each of whom all the organs are developed in an average degree; and if the one of them has been educated among persons of sordid and mercenary dispositions, Acquisitiveness and Self-Esteem being cultivated in him into a high degree of activity, self-interest and personal aggrandizement would be viewed as the great objects of life. If the Love of Approbation were trained into combined activity with these faculties, it would desire distinction in wealth or power; if Veneration were trained to act in concert with them, it would take the direction of admiring the rich and great; and, Conscientiousness not being predominantly vigorous, would only intimate that such pursuits were unworthy, without possessing the power by itself, of overcoming or controlling the whole combination against it. If another individual, possessing the same development, were trained amidst moral and religious society, in whose habitual conduct the practice of benevolence and justice towards-men, and veneration towards God, was the leading object, the Love of Approbation, acting with this combination, would desire esteem for honorable and virtuous actions; and Acquisitiveness would be viewed as the means of procuring gratification to these higher powers, but not as itself an object of paramount importance. The practical conduct of the two individuals might be very different in consequence of this difference of training.

The principle now under discussion is not inconsistent with the influence of size; because it is only in individuals in whom the organs are nearly on an equality in point of size, that so great effects can be produced by combinations in activity. In such cases, the Phrenologist, in estimating the effects of size, always inquires into the education bestowed.

The doctrine of combinations in activity explains several other mental phenomena of an interesting nature. In viewing the heads of the higher and lower classes of society, we do not perceive the animal organs preponderating in point of size in the latter, and the moral sentiments in the former, in any very palpable degree. The high polish, therefore, which characterizes the upper ranks, is the result of sustained harmony in the action of the different faculties, and especially in those of the moral sentiments, induced by long cultivation; while the rudeness observable in some of the lower orders, result from a predominating combination in activity among the lower propensities. The awkwardness that frequently characterizes them, arises from the propensities, sentiments, and intellect, not being habituated to act together. If, however, an individual is very deficient in the higher organs, he will, although born and educated in the best society, remain vulgar in consequence of this defect, in spite of every effort to communicate refinement by training; while on the other hand, if a very favorable development of the organs of the higher sentiments and intellect is possessed, the individual, in whatever rank he moves, will have the stamp of Nature's nobility.

Several moral phenomena also, which were complete enigmas to the older metaphysicians, are explained by this principle. Dr. Adam Smith, in his Theory, chapter II., 'On the influence of fortune upon the sentiments of mankind, with regard to the merit and demerit of actions,' states the following case: A person throws a large stone over a wall into the public street, without giving warning to those who are passing, and without regarding where it may fall; if it light upon a person's head, and knock out his brains, we would punish the offender pretty severely; but if it fall upon the ground, and hurt nobody, we would be offended with the same measure of punishment, which, in the former event, we would reckon just; and yet the demerit in both cases is the same. Dr. Smith gives no theory to account for these differences of moral determination. Phrenology explains them. If the stone falls upon an unhappy passenger, Benevolence in the spectator is outraged;—if the sufferer had a wife and family, Philoprogenitiveness and Adhesiveness are offended. Self-Esteem and Cautiousness also are excited, by the idea that we might have shared the same fate; all these rouse Destructiveness, and the whole together loudly demand a smart infliction on the transgressor to appease them. In the other event, when the stone falls to the ground, and hurts nobody, the only faculties excited are Intellect, Conscientiousness, and probably Cautiousness; and these calmly look at the motive of the offender, which probably was mere thoughtless levity, and enact a slight punishment against him. The proper sentence, in such a case, is that which would be pronounced by Intellect, and the moral sentiments acting in combination, uninfluenced by the lower propensities.

In like manner, when a person becomes judge in his own cause, Self-Esteem, Acquisitiveness, and probably Combativeness and Destructiveness, roused by the conduct of the opposite party, mingle their influence with that of Conscientiousness, and the result is a determination frequently the very opposite of justice. When a neutral person is appointed as a judge, Conscientiousness and Intellect alone are called into activity, and absolute justice is the result of a powerful sentiment of Conscientiousness, thoroughly enlightened by an acute and well-informed understanding. In party politics, Adhesiveness, Love of Approbation, and Benevolence, not to mention Combativeness and Destructiveness, are extremely apt to enter into vivid activity, in surveying the conduct of an individual who has distinguished himself by zealous efforts upon our own side; and our judgment of his conduct will, in consequence, be the determination of Intellect and Conscientiousness, disturbed and led astray by these inferior feelings.

ON MATERIALISM.

THE objection, that Phrenology leads to materialism, has been frequently urged against the science; but it appears singularly unphilosophical, even upon the most superficial consideration. There are two questions, very different in themselves, which are often confounded. The one is, On what is the mind dependent for *existence?* The other, On what is it dependent for its power of *manifesting itself in this life?* Phrenologists declare themselves unable to decide upon the former point; but they maintain, that facts demonstrate the power of manifestation to depend on the condition of the organization. When, therefore, a phrenologist says that 'the mental qualities and capacities are *dependent* upon the bodily constitution,' the sentence fails to be completed, 'not for *existence*, but for the *power of acting in this material world.*'—See Phren. Jour. vol. ii. p. 148. Phrenology, therefore, viewed as the assertion of certain physical facts, cannot, if unfounded, lead logically to any result, except the disgrace and mortification of its supporters. On such a supposition, it cannot overturn religion, or any other *truth;* because, by the constitution of the human intellect, error constantly tends to resolve itself into nothing, and to sink into oblivion; while truth having a real existence, remains permanent and impregnable.' In this view, then, the objection, that Phrenology leads to materialism, is absurd. If, on the other hand, the science is held to be a *true interpretation of nature*, and if it is urged, that, nevertheless, it leads fairly and logically to materialism, then the folly of the objection is equally glaring; for it resolves itself into this,—that materialism is the constitution of nature, and that Phrenology is dangerous, because it makes this constitution known.

The charge assumes a still more awkward appearance in one shape, in which it is frequently brought forward. The objector admits that the mind uses the body as an instrument of communication with external nature, and maintains, that this fact does not necessarily lead to materialism. In this I agree with him; but I cannot perceive how it should lead nearer to this result, to hold that each faculty manifests itself by a peculiar organ. In short, in whatever point of view the system is regarded, whether as true or false, the objection of materialism is futile and unphilosophical; and one must regret that it should have been brought forward in the name of Religion, because every imbecile and unfounded attack against Philosophy, made in this sacred name, tends to diminish the respect with which it ought always to be invested.

The question of materialism itself, however, as a point of abstract discussion, has of late excited considerable attention; and I shall offer a few remarks upon its general merits. In entering on the subject, it is proper to take a view of the nature and extent of the point in dispute, and of the real effect of our decision upon it. The question then is, Whether the *substance* of which the thinking principle is composed be matter or spirit? And the effect of our decision, let it be observed, is not to *alter the nature of that substance*, whatever it is, but merely to adopt an opinion consonant with, or adverse to, a fact in nature over which we have no control. Mind, with all its faculties and functions, has existed since the creation, and will exist until the human race becomes extinct, and no opinion of man concerning the cause of its phenomena, can have the least influence over that cause itself. The mind is invested, by nature, with all its properties; and these it will possess, and manifest and maintain, let men think, and speak, and write, what they will, concerning its substance. If the Author of Nature has invested the mind with the quality of endless existence, it will, to a certainty, flourish in immortal youth, in spite of every appearance of premature decay. If, on the other hand, he has limited its existence to this passing scene, and decreed that it shall perish forever when the animating principle passes from the body, then all our conjectures, arguments, discussions, and assertions, respecting its immortality, will not add one day to its existence. The opinions of man, therefore, concerning the substance of the mind, can have no influence whatever in changing or modifying that substance itself; and if so, as little can these opinions undermine the constitution of the mind, or its relations to time and eternity, on which, as their foundations, morality and religion must, and do rest as on an immutable basis. According to Phrenology, morality and natural religion originate in, and emanate from, the primitive constitution of the mental powers themselves. Innumerable observations have proved, that faculties and organs of Benevolence, Hope, Veneration, Justice, and Reflection, exist. Now, our believing that the mind will die with the body will not pluck these sentiments and powers from the soul; nor will our believing the mind to be immortal, implant a single one more of them in our constitution. They would all remain the same in function and constitution, and render virtue amiable, and vice odious, although we should believe the mind to be made of dust, just as they would do, were we to believe the mind to be a more immediate emanation from the Deity himself.

In short, this question of materialism is one of the most vain, trivial, and uninteresting that ever engaged the human intellect; and nothing can be more unphilosophical, and more truly detrimental to the interests of morality and religion, than the unfounded clamor, or cant shall I call it, which has been poured forth from the periodical journals about the dangers attending it. A manly intellect, instead of bowing before prejudice, would dissipate it, by showing that the question is altogether an illusion, and that, adopt what opinion we will, concerning the substance of the mind, every attribute belonging to it must remain unaltered and unimpeached.

But not to stop in our investigation till we have reached the goal, we may inquire, whether it be possible to discover the substance of which the mind is composed, and to determine whether it be material or immaterial? The first step in this investigation is to ascertain what means we possess of arriving at a knowledge of the essence of the mind. All our knowledge must be derived either from consciousness or observation. Now, by reflecting on what we feel, we discover nothing concerning the nature or essence of the thinking being. We do not feel a spiritual substance stirring within us, and elaborating sentiment and thought; and neither do we feel a *material substance* producing these effects. We are conscious of feelings and emotions, of friendships and attachments, of high conceptions and glorious thoughts; but whether these originate from matter or spirit; whether the first embryo substance of reflection dwelt lowly in the dust, or soared a pure ethereal essence amid the regions of boundless space, before it was constituted a part of us; whether God, in creating man, was pleased to invest his material organs with the property of thought, or to infuse into him a portion of immaterial fire;—on all these points consciousness gives us no information. A great deal of popular delusion, indeed, has been kept alive on this point, by the fact being overlooked, that we are not conscious of the operations of the brain. Men in general, because they are sensible only of thought and feeling, and not of the movements of any material organ performing these acts of the mind, imagine that it is necessarily an immaterial substance which is thinking and feeling within them; but they are equally unconscious of the contraction and relaxation of the muscles; and they might as well imagine that the legs and arms are moved, not by material organs, but by the direct impulse of spirit, as entertain the supposition in question. In short, the truly philosophical conclusion is, that, by means of *consciousness*, we are unable to discover of what substance the thinking principle is composed.

Does *observation*, then, throw a stronger and steadier light upon this long-agitated question? The mental organs, while in health, and in the natural state in which their functions are most perfectly performed, are completely hid from inspection. No eye can penetrate the integuments of the head, and the tables of the skull, and the *dura mater*, and the *pia mater*, to obtain a view of the operations performed in the brain, while the thoughts run high, and the sentiments swell with emotion; and when external injury or disease removes these coverings, the mind does not then disport in all the vigor of its healthy action. Besides, even when all these external obstacles to inspection are removed, still it is only the surface of the convolutions which is perceived; and the soul may be enthroned in the long fibres which extend from the surface to the *medulla oblongata*, and thought may be elaborated there, and still evade detection; or thought may be a process altogether beyond the cognizance of any of our senses. It may be said, however, that death will solve the question, and allow the whole secrets of the soul to be disclosed; but, alas! when the pulse has ceased to beat and the lungs to play, the brain presents nothing to our contemplation, but an inert mass, of a soft and fibrous texture, in which no thought can be discerned, no sentiment perceived, and no spirit or immaterial substance can be traced; so that from inspecting it, even imagination receives no food for conjecture, as to the presence or absence of an immaterial guest, whlie life and health animated its folds.

Observation, therefore, reveals as little in regard to the substance of the mind as does reflection on consciousness; and as no other modes of arriving at certain knowledge are open to man, the solution of the question appears to be placed completely beyond his reach. In short, to use an observation of Dr. SPURZHEIM, Nature has given man faculties fitted to observe phenomena as they at present exist, and the relations subsisting between them; but has denied to him the powers fitted to discover, as a matter of direct perception, either the beginning or the end, or the essence of anything under the sun; and we may amuse our imaginations with conjectures, but will never arrive at truth, when we stray into these interdicted regions.

} Perhaps not

The solution of the question, therefore, is not only unimportant, but it is impossible; and this leads me to observe, that no idea can be more erroneous than that which supposes the dignity and future destiny of man, as an immortal being, to depend, of necessity, on the substance of which he is made.

Let us allow to the materialists, for the sake of argument, that the brain is the mind, and that medullary matter thinks,—what then? If in fact it does so, it must be the best possible substance for thinking, just because the CREATOR selected it for the purpose, and endowed it with this property. In this argument the religious constantly forget that the same OMNIPOTENT hand made the brain that created the mind and the universe itself, and that, in the dedication of every cerebral convolution to its objects, be they thinking or any other process, the Divine Wisdom is as certainly exercised, as in impressing motion on the planets, or infusing light and heat into the sun. If, therefore, *de facto*, God has made the brain to think, we may rest assured that it is exquisitely and perfectly adapted for this purpose, and that His objects in creating man will not be defeated on account of His having chosen a *wrong substance*, out of which to constitute the thinking principle. But what *are* His objects in creating man? This brings us to the jet of the question at once. Some authors make materialism the foundation of atheism, and wish us to believe that the best evidence of the Divine intention in creating the human soul, is to be found in discovering the *substance* of which it is made; and they insinuate, that if it is constitued by a very refined and dignified material, it is intended for magnificent destinies; while, if it is composed of a rude and vulgar stuff, it must be intended to live only in this lower world. Here, however, sense and logic equally fail them; for no principle in Philosophy is more certain than that, from a knowledge of the mere substance of anything, *we cannot infer* for what ends it is fitted. Exhibit to a human being every variety of imaginable essence, and if you allow him to know no more of its properties than he can discover from examining its ultimate elements, he will be utterly incapable of telling whether it is calculated to endure for a day, or to last to eternity. The materialist, therefore, is not entitled, even from the supposed admission that medullary matter thinks, to conclude that the human being cannot be immortal and responsible. The true way of discovering for what end man has been created, is to look to the *qualities* with which he has been endowed, trusting that the substance of which he is composed is perfectly suited to the objects of his creation. Now, when we inquire into the qualities, we find the thinking principle in him to differ, not only in *degree*, but in *kind*, from that of the lower animals. The latter have no faculty of Justice, to indicate to them that the unrestrained manifestation of Destructiveness or Acquisitiveness is wrong; they have no sentiment of Veneration, to prompt them to seek a GOD, whom they may adore; they have no faculty of Hope, pointing out futurity as an object of ceaseless anxiety and contemplation, and leading them to desire a life beyond the grave; and, indeed, the convolutions of the brain, which in man constitute the organs of these sentiments, do not exist in the lower animals. Those organs, also, which in man serve to manifest the faculties of Reflection, are, in the lower animals, eminently deficient, and their understanding, in exact correspondence with this fact, is so limited as to be satisfied with little knowledge, and to be insensible to the comprehensive design and glories of creation. Man, then, being endowed with qualities which are denied to the lower creatures, we are entitled, by a legitimate exercise of *reflection*—the subject being beyond the region of the external senses—to conclude, on principles truly philosophic, that he is designed for another and a higher destiny than is to be allotted to them, whatever be the *essence* of his mind.

OBJECTIONS TO PHRENOLOGY CONSIDERED.

Objection.—The idea of ascribing different faculties to different parts of the brain is not new. Many authors did so before Dr. GALL; but their systems have fallen into disrepute, which proves that the doctrine is not true.

Answer.—Dr. GALL himself has called the attention of philosophers to the fact, that the idea alluded to is very old: he has given a history of previous opinions concerning the functions of the brain; and shown, that different functions have been attributed to different parts of it for centuries past, while he has assigned reasons for these ideas falling into oblivion. Dr. SPURZHEIM, in his works, does the same; and, in the Phrenological Journal, No. VII. Art. 8. 'An Historical Notice of early Opinions concerning the Brain' is given, accompanied with a plate of the head, showing it marked out into different organs in 1562. The difference, however, between the *mode of proceeding* of prior authors and that of Dr. GALL, is so great, that different results are accounted for. Former speculators assigned to certain mental faculties local situations in the brain, on account of the supposed aptitude of the place to the faculty. Common sense, for example, was placed in the forehead, because it was near the eyes and nose; while memory was lodged in the cerebellum, because it lay, like a store-house, behind, fitted to receive and accommodate all kinds of knowledge, till required to be brought forth for us. This was not philosophy. It was the human imagination constructing man, instead of the understanding observing how the Creator had constituted him. Dr. GALL acted on different principles. He did not assume any mental faculties, and neither did he assign them habitations in the brain according to his fancy. On the contrary, he *observed first*, The manifestations of mental talents and dispositions; and, *secondly*, The form of brain which accompanied each of these when strong, and weak. He simply reported what Nature had done. There is the same difference between his method of proceeding and that of prior authors, as between that of DES CARTES and NEWTON; and hence it is equally intelligible, why he should be successful in discovering truth, while they invented only ingenious errors.

Objection.—It is ridiculous to suppose that the mind has thirty-five faculties: why not fifty-five? or an hundred and five? Besides, the phrenologists have been continually altering the number.

Answer.—As well may it be said to be absurd, that we should possess exactly five senses: why not ten, or fifteen? The phrenologists deny all responsibility for the number of the faculties. They admit neither fewer, nor a greater number, than they find manifested in nature. Besides, authors on mental philosophy admit as many, and some more, faculties than the phrenologists. Lord KAIMES, for example, admits twenty of the phrenological faculties; while Mr. DUGALD STEWART, in his System, ascribes more faculties to the mind than are enumerated in the phrenological works. The increase of the number of the phrenological faculties is easily accounted for. It has invariably been stated, that the functions of certain portions of the brain remain to be discovered, and, in proportion as this discovery proceeds, the list of mental powers will necessarily be augmented.

Objection.—'On opening the skull, and examining the brain towards the surface, where the organs are said to be situated, it seems to require no small share of creative fancy, to see any thing more than a number of almost similar convolutions, all composed of cineritious and medullary substance, very nearly in the same proportions, and all exhibiting as little difference in their form and structure as the convolutions of the intestine.' 'No phrenologist has ever yet observed the supposed lines of distinction between them; and no phrenologist, therefore, has ventured, in the course of his dissections, to divide a hemisphere of the brain accurately into any such number of well marked and specific organs.'

This objection was urged by the late Dr. JOHN BARCLAY, and is answered at full length by Dr. A. COMBE, in the Phrenological Transactions. A summary only of his observations can be introduced here. *First*, Although the objection were literally true, it is not relevant; because, it is an admitted principle of physiology, that the form and structure of an organ is not sufficient to convey an idea of its functions; no man who saw an eye, an ear, or a nostril, for the first time, (supposing it were possible for a man to be so situated) could, merely by looking at it, infer its uses. The most expert anatomist had looked frequently and long upon a bundle of nervous fibres, inclosed in a common sheath, without discovering that one set of them was the organ of voluntary motion, and another that of feeling; on the contrary, from their similarity of appearance, these nerves had, for ages, been regarded as possessing similar functions. Nevertheless, Mr. C. BELL and MAGENDIE have demonstrated, by experiment, that they possess the distinct functions of feeling and motion. Mr. BELL has, more recently, proved, that another nerve, the use of which nobody had conjectured from its structure, serves to convey to the brain, intimation of the state of the muscles; so that there is now evidence of the muscular system being supplied with three distinct sets of nerves, having separate functions, which was never conjectured from appearances. It may therefore competently be proved, by observation, that different parts of the brain have distinct functions, although it were true that no difference of structure could be perceived.

But, *2dly*, It is not the fact that difference of appearance is not discoverable. It is easy to distinguish the anterior, the middle, and posterior lobes of the human brain from each other; and, were they shown separately to a skilful phrenological anatomist, he would never take one for the other. The mental manifestations are so different, according as one or other of these lobes predominate in size, that there is even in this case ample room for establishing the fundamental proposition, that different faculties are connected with different parts of the brain. Farther; many of the organs differ so decidedly in appearance, that they could be pointed out by it alone. Dr. SPURZHEIM says, that he 'should never confound the organ of '*Amativeness* with that of *Philoprogenitiveness;* or *Philoprogenitiveness* with that of *Secretiveness;* or the organ of the *desire to acquire* with that of *Benevolence* or *Veneration;*' and, after having seen Dr. SPURZHEIM'S dissections of the brain, I bear my humble testimony to the truth of this assertion. Even an ordinary observer, who takes a few good casts of the brain in his hand, may satisfy himself that the anterior lobe, for example, uniformly presents convolutions different in appearance, direction, and size from those of the middle lobe; while the latter, towards the coronal surface, uniformly presents convolutions differing in appearance and direction from those of the posterior lobe; and, above all, the cerebellum, or organ of *Amativeness*, is not only widely different in structure, but is separated by a strong membrane from all other organs, and can never be mistaken for any of them. Difference of appearance, therefore, being absolutely demonstrable, there is much better reason on the side of the Phrenologists for presuming difference of function, than on that of the opponents for maintaining unity of function.

3dly, It is admitted that the organs are not perceived to be separated in the brain by strong lines of demarcation; but those persons who have either seen Dr. SPURZHEIM dissect the brain, or have attended minutely to its impressions on the skull, will support me in testifying, that the *forms* of the organs are distinguishable, and that the mapping out is founded in nature. To bring this to the test, the observer has only to compare the appearance of particular organs in a state of large development, the surrounding organs being small, with the appearance when particular organs are small, and the neighboring ones are large. The *form* is then distinctly visible.

Objection.—All parts of the brain have been injured or destroyed, without the mental faculties being affected.

Answer.—The assertion is denied: there is no philosophical evidence for it. The subject is discussed at length by Dr. A. COMBE, in the Phrenological Transactions, and in the 'System of Phrenology.' The objection is now generally abandoned by persons who have considered the cases, with the answers to them.

Objection.—The world has gone on well enough with the philosophy of mind it already possesses, which, besides, is consecrated by great and venerable names,—while Phrenology has neither symmetry of structure, beauty of arrangement, nor the suffrages of the learned to recommend it. Its votaries are all third-rate men—persons without scientific or philosophical reputations. They are not entitled, therefore, to challenge the regard of those who have higher studies to occupy their attention. They complain that only ridicule and abuse are directed against them, and that no one ventures to challenge their principles or refute their facts; but they do not yet stand high enough in public esteem to give them a right to expect any other treatment.

Answer.—The world has *not* gone on well enough without phrenology. A fierce and universal conflict of opinions is maintained on many important subjects connected with mind, which cannot be satisfactorily settled till the true philosophy of man shall be discovered and understood. Education and social institutions also, rest in many respects on imperfect foundations; and, at the present moment, mankind require nothing more urgently than a sound, practical, and rational system of mental philosophy. Moreover, phrenology being a new science, it follows that men who possess reputation in physiology or mental philosophy would appear to lose rather than gain renown, were they to confess their present ignorance of the functions of the brain and the philosophy of mind, which is a necessary prelude to their adoption of phrenology; and the subject does not lie directly in the department of other scientific men. In this manner it happens, oddly enough, that those who are most directly called upon by their situation to examine the science, are precisely those to whom its triumph would prove most humiliating. LOCKE humorously observes on a similar occasion, 'Would it not be an insufferable thing for a learned professor, and that which his scarlet would blush at, to have his authority, of forty years standing, wrought out of hard rock, Greek and Latin, with no small expense of time and candle, and confirmed by general tradition and a reverend beard, in an instant overturned by an upstart novelist? Can any one expect that he should be made to confess, that what he taught his scholars thirty years ago was all error and mistake, and that he sold them hard words at a very dear rate? What probabilities, I say, are sufficient to prevail in such a case? And who ever, by the most cogent argument, will be prevailed with to disrobe himself at once of all his old opinions and pretences to knowledge and learning, which with hard study he hath all his time been laboring for, and turn himself out stark-naked in quest of fresh notions? All the arguments that can be used will be as little able to prevail as the wind did with the traveller to part with his cloak, which he held only the faster.' * Human nature is the same now as in the days of LOCKE.

There is, however, another answer to the present objection. Some individuals are born princes, dukes, or even field-marshals; but I am not aware that it has yet been announced that any lady was delivered of a child of genius, or an infant of established reputation. These titles must be gained by the display of qualities which merit them; but if an individual quit the beaten track pursued by the philosophers of the day, and introduce any discovery, although equally stupendous and new, his reputation is necessarily involved in its merits? HARVEY was not a great man *before* he discovered the circulation of the blood, but became such in consequence of having done so. What was SHAKSPEARE before the magnificence of his genius was justly appreciated? The author of Kenilworth represents him attending as an humble and comparatively obscure suitor at the court of Queen ELIZABETH, and receiving n mark of favor in an 'Ah! Will Shakspeare, are you there?' And he most appropriately remarks, that here the immortal paid homage to the mortal. Who would now exchange the greatness of SHAKSPEARE for the splendor of the proudest lord that bowed before the Maiden Queen? Or, let us imagine GALILEO, such as he was in reality, a feeble old man, humble in rank, destitute of political influence, unprotected by the countenance or alliance of the great, poor, in short, in every thing except the splended gifts of a profound, original, and comprehensive genius—and conceive him placed at the bar of the Roman pontiff, and the seven cardinals, men terrible in power, invested with authority to torture and kill in this world, and, as was then believed, to damn through eternity; men magnificent in wealth, and arrogant in the imaginary possession of all the wisdom of their age—and let us say who was *then* great in reputation—GALILEO or his judges? But who is *now* the idol of posterity—the old man or his persecutors? The case will be the same with GALL. If his discoveries of the functions of the brain, and of the philosophy of the mind, stand the test of examination, and prove to be a correct interpretation of nature, they will surpass, in substantial importance to mankind, the discoveries even of HARVEY, NEWTON, and GALILEO; and this age will in consequence be rendered more illustrious by the introduction of phrenology, than by the victories of BONAPARTE or WELLINGTON. Finally, the assertion that no men of note have embraced phrenology, is not supported by fact. The lists of the members of the Phrenological Societies of Paris, London, Edinburgh, and various towns in the United States, furnish a refutation of the charge. Besides, the writings of the phrenologists will bear a comparison in point of skill, extent of information, correctness of logic, and profundity of thought, with those of the most eminent of their opponents.

---

* Book iv. c. 20, sect. 11.

Objection.—All the disciples of phrenology are persons ignorant of anatomy and physiology. They delude lawyers, divines, and merchants, who know nothing about the brain; but all medical men, and especially teachers of anatomy, are so well aware of the fallacy of their doctrines, that no impression is made on them. They laugh at the discoveries, as dreams.

Answer.—This objection, like many others, is remarkable more for boldness than truth. For my own part, before adopting phrenology, I saw Dr. BARCLAY and other anatomical professors dissect the brain repeatedly and heard them declare its functions to be an enigma, and acknowledge that their whole information concerning it consisted of ‘ names without meaning.’ It is acknowleged, in No. 94 of the Edinburgh Review, p. 447, that the functions of the brain are unknown to anatomists, and that their mode of dissecting it is absurd. The circumstance, therefore, puts the whole faculty, who have not studied phrenologically, completely out of the field as authorities. The *fact*, however, is the very reverse of what is here stated. Drs. GALL and SPURZHEIM are now pretty generally admitted to have been admirable anatomists of the brain, even by those who disavow their physiology; Dr. Vimont of Paris is a first-rate comparative anatomist; and in the lists of the Phrenological Societies, there are doctors in medicine and surgeons, in a proportion considerably larger than that of the medical profession to society in general. The leading medical journals also have adopted phrenology as true.

Objection.—'It is inconceivable, that, after the discovery was made, there should be *any body* who could pretend to doubt of its reality. The means of verifying it, one would think, must have been such as not to leave a pretext for the slightest hesitation; and the fact that, after twenty years' preaching in its favor, it is far more generally rejected than believed, might seem to afford pretty conclusive evidence against the possibility of its truth.'

Answer.—Mr. PLAYFAIR, in his 'Dissertation,' prefixed to the Supplement of the Encyclopædia Britannica, observes,—'It must not be supposed that so great a revolution in science as that which was made by the new analysis, (by NEWTON,) could be brought about entirely without opposition, as in every society there are some who think themselves interested to maintain things in the condition wherein they have found them. The considerations are indeed sufficiently obvious, which, in the moral and political world, tend to produce this effect, and to give a stability to human institutions often so little proportionate to their real value, or to their general utility. Even in matters purely intellectual, and in which the abstract truths of arithmetic and geometry seem alone concerned, the prejudices, the selfishness, or the vanity of those who pursue them, not unfrequently combine to resist improvement and often engage no inconsiderable degree of talent in drawing back, instead of pushing forward, the machine of science. The introduction of methods entirely new must often change the relative place of the men engaged in scientific pursuits, and must oblige many, after descending from the stations they formerly occupied, to take a lower position in the scale of intellectual improvement. The enmity of such men, if they be not animated by a spirit of real candor and the love of truth, is likely to be directed against methods by which their vanity is mortified and their importance lessened.'—*Dissertations*, Part II. p. 27.

Mr. PLAYFAIR, again, speaking of the discoveries of NEWTON in regard to the composition of light, says, 'But all were not equally candid with the Dutch philosopher, (Huygens,) and though the discovery now communicated had every thing to recommend it which can arise from what is great, new, and singular; though it was not a theory or system of opinions, but the generalization of facts made known by experiments; and though it was brought forward in a most simple and unpretending form,—a host of enemies appeared, each eager to obtain the unfortunate pre-eminence of being the first to attack conclusions which the unanimous voice of posterity was to confirm.'—p. 56. 'Among them, one of the first was Father PARDIES, who wrote against the experiments, and what he was pleased to call the *hypothesis* of NEWTON. A satisfactory and calm reply convinced him of his mistake, which he had the candor very readily to acknowledge. A countryman of his, MARIOTTE, was more difficult to be reconciled, and, though very conversant with experiments, appears never to have succeeded in repeating the experiment of NEWTON.—*Ib.* p. 57.

These observations are completely applicable to the case of phrenology. The discovery is new, important, and widely at variance with the prevailing opinions of the present generation; and its reception and progress have been precisely such as any sensible person, acquainted with the history of science, would have anticipated. 'The discoverer of the circulation of the blood,* says the Edinburgh Review,*—' a discovery which, if measured by its consequences on physiology and medicine, was the greatest ever made since physic was cultivated, suffers no diminution of his reputation in our day, from the incredulity with which his doctrine was received by some, the effrontery with which it was claimed by others, or the knavery with which it was attributed to former physiologists, by those who could not deny, and would not praise it. The very names of these envious and dishonest enemies of HARVEY are scarcely remembered; and the honor of this great discovery now rests, beyond all dispute, with the great philosopher who made it.' Posterity will pass a similar judgment on Dr. GALL and his opponents.

ON DIFFERENT CLASSIFICATIONS AND NUMERATIONS OF THE ORGANS.

THE organs are arranged and numbered in this work, according to the order adopted in Dr. SPURZ-

---

* No. XCIV. p. 76. The article quoted in the text is 'On the Nervous System;' and the names of Drs. GALL and SPURZHEIM are not mentioned in it, from beginning to end. The author therefore exemplifies the injustice he so eloquently condemns.

* [illegible] at the time of this discovery [illegible]

HEIM's Outlines of Phrenology, published in 1827. The principle of that arrangement was, as far as possible, philosophical. The organs common to man and the lower animals come first, beginning with the lowest, and ascending. The organs of the moral sentiments are next treated of; and, lastly, the organs of intellect. The abrupt transition from the organ of Cautiousness to that of Benevolence, arises from the latter being found in the brains of the lower animals, and belonging to the class common to them and man; whereas the convolutions which constitute the whole intermediate organs, or those of the sentiments proper to man, viz. Veneration, Hope, Ideality, and Conscientiousness, are not observed in the brutes. This arrangement is founded on the anatomy of the brain. The organs classed together are evidently connected in structure. It was the demonstration of this fact by Dr. SPURZHEIM, in his visit to Edinburgh in 1828, that induced me to adopt his alterations; for, in the previous editions of this work, I followed his classification of 1815. The arrangement is not yet represented as perfect, but only as improved.

Dr. GALL appears not to adopt any philosophical principle in his arrangement of the organs; but it is proper that his order should be known; and it is given below. For the accommodation of persons who possess busts, marked according to the previous classification, it also is subjoined.

Names and Orders of the Organs adopted by Dr. GALL.

No.	FRENCH.	GERMAN.	ENGLISH Names given by Dr. SPURZHEIM.
1.	Instinct de la generation.	Zeugungstrieb.	Amativeness.
2.	Amour de la progéniture.	Jungenliebe Kinderliebe.	Philoprogenitiveness.
3.	Attachement amitié.		Adhesiveness.
4.	Instinct de la défense de soi-même et de sa propriété.	Muth, Raufsinn.	Combativeness.
5.	Instinct carnassier.	Wurgsinn.	Destructiveness.
6.	Ruse, finesse, savoir-faire.	List, Schlauheit, Klugheit.	Secretiveness.
7.	Sentiment de la propriété.	Eigenthumsinn.	Acquisitiveness.
8.	Orgueil, fierté, hauteur.	Stolz, Hochmuth, Herschsucht.	Self-Esteem.
9.	Vanité, ambition, amour de la gloire.	Eitelkeit, Ruhmsucht, Ehrgeitz.	Love of Approbation.

No.	FRENCH.	GERMAN.	ENGLISH Names given by Dr. SPURZHEIM.
10.	Circonspection, prévoyance.	Behutsamkeit, Vorsicht, Vorsichtigkeit.	Cautiousness.
11.	Mémoire des choses, mémoire, des faits sens des chose, éducabilité perfectibilité.	Sachgedœchtniss, Erziehungs-Fœhigkeit.	Eventuality.
12.	Sens des localités, sens des rapports de l'espace.	Ortsinn, Raumsinn.	Locality.
13.	Mémoire des personnes, sens des personnes.	Personen-sinn.	Form.
14.	Sens des mots, sens des noms, mémoire des mots, mémoire verbale.	Wort-Gedœchniss.	Language.
15.	Sens de langage de parole, talent de la philologie, &c.	Sprach-Forschungs-sinn.	Held by Dr. SPURZHEIM to be included in the last organ.
16.	Sens des rapports des coulers, talents de la peinture.	Farben-sinn.	Coloring.
17.	Sens des rapports des tons, talent de la musique.	Ton-sinn.	Tune.

No.	French.	German.	English Names given by Dr. Spurzheim.
18.	Sens des rapports des nombres.		Number.
19.	Sens de méchanique, sens de construction, talent de l'architecture.	Kunst-sinn, Bausinn.	Constructiveness.
20.	Sagacité comparative.	Vergleichender-scharfsinn.	Comparison.
21.	Esprit metaphysique, profondeur d'esprit.	Metaphysischer-Tiefsinn.	Causality.
22.	Esprit caustique esprit de saillie.	Witz.	Wit.
23.	Talent poétique.	Dichter-Geist.	Ideality.
24.	Bonté bienveillance, douceur, compassion, &c.	Gutmœthigkeit, Mitleiden, &c.	Benevolence.
25.	Faculté d'imiter, mimique.		Imitation.
26.	Sentiment religieux.		Veneration.
27.	Fermeté constance persévérance.		Firmness.

Dr. Gall has marked as unascertained several organs admitted by other Phrenologists.

Names and Orders of the Organs, according to the Classification in the previous Editions of this Work.

ORDER I.—FEELINGS.

Genus I.—PROPENSITIES.

1. Amativeness.
2. Philoprogenitiveness.
3. Concentrativeness.
4. Adhesiveness.
5. Combativeness.
6. Destructiveness.

   Alimentiveness.
7. Secretiveness.
8. Acquisitiveness.
9. Constructiveness.

Genus II.—SENTIMENTS.

1. *Sentiments common to Man and the lower Animals.*

10. Self-Esteem.
11. Love of Approbation.
12. Cautiousness.
13. Benevolence.

2. *Sentiments proper to Man.*

14. Veneration.
15. Firmness.
16. Conscientiousness.
17. Hope.
18. Wonder.
19. Ideality.
20. Wit or Mirthfulness.
21. Imitation.

ORDER II.—INTELLECTUAL FACULTIES.

Genus I.—EXTERNAL SENSES.

Feeling or Touch.
Taste.
Smell.
Hearing.
Sight.

Genus II.—Perceptive Faculties.

22. Individuality.
23. Form.
24. Size.
25. Weight or Resistance.
26. Coloring.
27. Locality.
28. Number.
29. Order.
30. Eventuality.
31. Time.
32. Tune.
33. Language.

Genus III.—Reflecting Faculties.

34. Comparison.
35. Causality.

DESCRIPTION OF CRANIOMETER.

FIGURE 1st represents a pair of Callipers. The numerals on the scale represent the width from point to point, when they are open. They are useful for ascertaining the general size of the head, as mentioned on p. 162. The legs are sometimes made to unscrew at AA, and fitted with hinges at BB, and the instrument can then be put into a small case, and carried in the pocket. The ball C is for inserting into the orifice of the ear, in taking measurements from it to different points of the head.

Figure 2d represents a Craniometer, invented by Mr. ROBERT ELLIS and Mr. WILLIAM GRAY, and approved of, in its present form by the Phrenological Society. The object of it is to measure the length from the *medulla oblongata*, or top of the spinal marrow, where each organ originates, to the point where it reaches the surface of the brain. The rods BB are moveable, and the balls (made of ivory or brass,) on the inner ends of them, go into the external opening of the ear. The point A is the middle of the axis which would be formed by the prolongation of these rods; and it coincides, not exactly, but pretty nearly with the middle of the *medulla oblongata*. The rods must be inserted to equal depths into the ears, otherwise the centre A would not coincide with the middle of the axis in the head. The roads are graduated, to secure accuracy in this respect. C, C, C, is an exact semicircle (made of steel or double plates of tin,) of which A is the centre. DE is an index, intended to measure distances from A. To construct it accurately, make the end D touch A, and the other end coincide with every part of the circumference of the semicircle. When drawn out, the end E rises as far above the circumference as the end D recedes from the point A. The index is graduated, beginning at the top, and the lengths are read off as they appear on the projecting part.

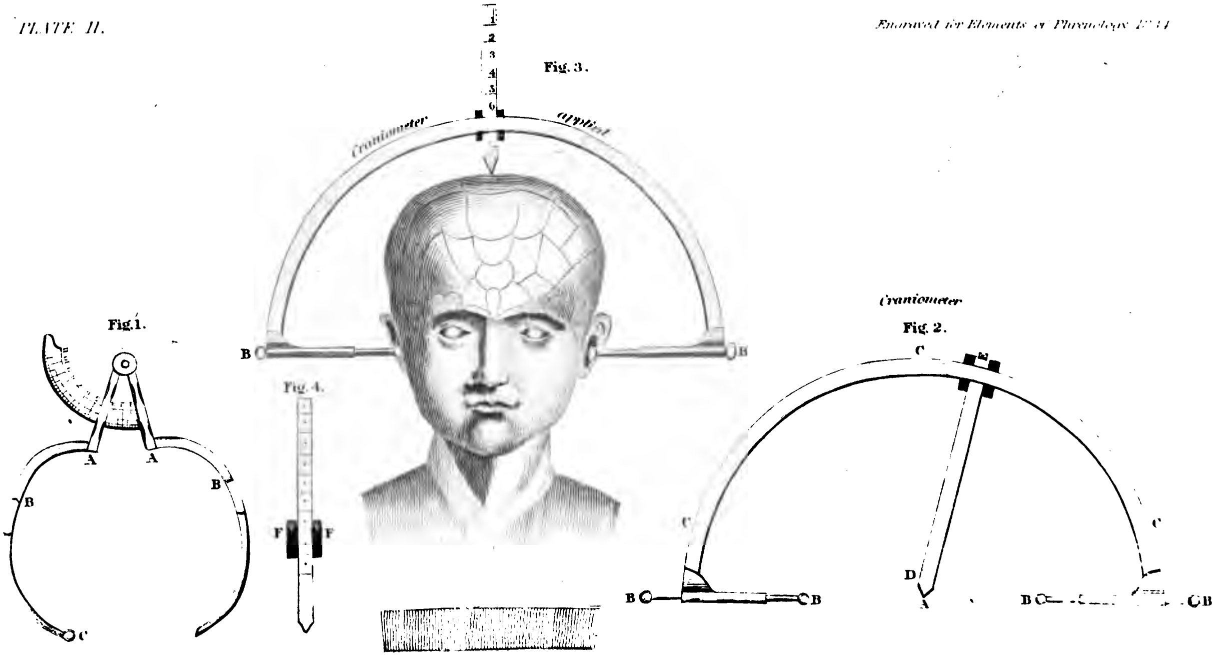
Figure 3d represents the craniometer applied. The semicircle moves backwards and forwards on the axis, B, B, and the index may be moved from right to left along the circumference. To keep the index always pointing to A, it is made to slide in a piece of wood F, Figure 4, the sides of a groove of which form a segment of a circle, coinciding with, and applied to, the circumference of the semicircle.

This instrument measures only the length of the organs. Their breadth is judged of by their expansion at the surface; and the two dimensions give their absolute size. It has not come into general use.

Mr. HENRY THOMPSON has favored me with a drawing and relative explanation, calculated to represent the effects of a number of the most frequent combinations in size in a tabular form; but the limits of this work prevent me laying it before the public.

PLATE II.

Engraved for Elements of Phrenology p. 44



THE SCHOOL ADVERTISER NO. II.
AUGUST, 1839.

THE SCHOOL LIBRARY.

MARSH, CAPEN, LYON, AND WEBB,

109, Washington Street, Boston,

Are now publishing, under the sanction of the Massachusetts Board of Education, a collection of original and selected works, entitled, 'The School Library.'

The Library will embrace two series of fifty volumes each ; the one to be in 18mo., averaging from 250 to 280 pages per volume ; the other in 12mo., each volume containing from 350 to 400 pages. The former, or *Juvenile Series*, is intended for children of ten or twelve years of age and *under;* the latter for individuals of that age, and *upwards*,—in other words, for advanced scholars and their parents.

The Library is to consist of *reading*, and not *school*, *class*, or *text* books ; the design being to furnish youth with suitable works for perusal during their leisure hours ; works that will interest, as well as instruct them, and of such a character that they will turn to them with pleasure, when it is desirable to unbend from the studies of the school room.

The plan will embrace every department of Science and Literature, preference being given to works relating to our own Country, and illustrative of the history, institutions, manners, customs, &c., of our own people. Being intended for the *whole* community, no work of a sectarian or denominational character in religion, or of a partisan character in politics, will be admitted.

The aim will be to clothe the subjects discussed, in a popular garb, that they may prove so attractive, as to lure the child onwards, fix his attention, and induce him, subsequently, to seek information from other and more recondite works, which, if put into his hands at the onset, would alarm him, and induce a disgust for that which would appear dry and unintelligible, and of course, uninteresting.

The intention is not to provide information for any one class, to the exclusion of others, but to disseminate knowledge among all classes. The Publishers wish the children of the Farmer, the Merchant, the Manufacturer, the Mechanic, the Laborer,—all to profit by the lights of science and literature, that they may be rendered the more virtuous and happy, and become more useful to themselves, to one another, to the community, and mankind at large. To accomplish this desirable end, the LIBRARY will embrace so wide a range of subjects, that every child may find something which will prove useful and profitable to him, whatever his situation, circumstances, or pursuits, in afterlife may be.

The project is one of great extent, and vast importance; and, if properly carried out, must become of inestimable value to the young. Whether the anticipations of the Publishers, with regard to it, will be verified, time must determine ; but from the intellectual and moral, theoretical and practical character of those who have engaged to aid in the undertaking, they have good grounds for presuming that much will be accomplished, and that by their united efforts many obstacles, now existing to the mental, moral, and physical improvement of youth, will be removed, or at least be rendered more easily surmountable.

Among the individuals already engaged as writers for one or both Series, may be mentioned—the Hon. Judge Story, Jared Sparks, Esq., Washington Irving, Esq., Rev. Dr. Wayland, Professor Benjamin Silliman, Professor Denison Olmsted, Professor Alonzo Potter, Hon. Judge Buel, Dr. Jacob Bigelow, Dr. Robley Dunglison, Dr. Elisha Bartlett, Rev. Charles W. Upham, Rev. F. W. P. Greenwood, Rev. Royal Robbins, Rev. Warren Burton, Arthur J. Stansbury, Esq., E. C. Wines, Esq., Robert Rantoul, Jr., Esq., Professor Tucker, and Professor Elton.

Mrs. Sarah J. Hale, Mrs. E. F. Ellet, Mrs. Emma C. Embury, Mrs. A. H. Lincoln Phelps, Miss E. Robbins, Miss E. P. Peabody, Miss Mary E. Lee, Miss Caroline Sedgwick.

No work will be admitted into the LIBRARY, unless it be approved by every member of the Board of Education; which Board consists of the following individuals, viz., His Excellency Edward Everett, Chairman, His Honor George Hull, Rev. Emerson Davis, Edmund Dwight, Esq., Rev. George Putnam, Robert Rantoul, Jr., Esq., Rev. Thomas Robbins, D. D., Jared Sparks, Esq., Hon. Charles Hudson, and Hon. George N. Briggs.

The following works, have been printed, and constitute the first ten volumes of the 12mo. series, viz.

LIFE OF COLUMBUS, by WASHINGTON IRVING, a new edition, (revised by the author,) including a Visit to Palos, and other additions, a portrait of the Great Navigator, a Map, and several illustrative engravings.

PALEY'S NATURAL THEOLOGY, in two volumes, with selections from the Dissertations and Notes of LORD BROUGHAM and SIR CHARLES BELL, illustrated by numerous wood cuts, and prefaced by a Life of the Author; (with a portrait;) the whole being newly arranged and adapted for The School Library, by ELISHA BARTLETT, M. D., *Professor of the Theory and Practice of Physic and Pathological Anatomy in Dartmouth College.*

LIVES OF EMINENT INDIVIDUALS, CELEBRATED IN AMERICAN HISTORY, in three vols., with portraits of Robert Fulton, Sebastian Cabot, and Sir Henry Vane, and autographs of most of the individuals.

VOL. I. WILL CONTAIN

Life of MAJOR-GENERAL JOHN STARK, by His Excellency Edward Everett.
" DAVID BRAINERD, by Rev. William B. O. Peabody.
" ROBERT FULTON, by James Renwick, LL. D., *Professor of Natural Philosophy and Chemistry, in Columbia College, New York City.*
" CAPTAIN JOHN SMITH, by George S. Hillard, Esq.

VOL. II. WILL CONTAIN

Life of MAJOR-GENERAL ETHAN ALLEN, by Jared Sparks, *Professor of History in Harvard University.*
" SEBASTIAN CABOT, by Charles Hayward, Jr., Esq.
" HENRY HUDSON, by Henry R. Cleveland, Esq.
" MAJOR-GENERAL JOSEPH WARREN, by Alexander H. Everett, LL. D.
" MAJOR-GENERAL ISRAEL PUTNAM, by O. W. B. Peabody, Esq.
" DAVID RITTENHOUSE, by Professor James Renwick, LL. D

VOL. III. WILL CONTAIN

Life of WILLIAM PINKNEY, by Henry Wheaton, LL. D., *Author of History of the Northmen.*
" SIR HENRY VANE, by Rev. Charles W. Upham.
" MAJOR-GENERAL ANTHONY WAYNE, by John Armstrong, Esq.
" WILLIAM ELLERY, by Edward T. Channing, Esq.
" MAJOR-GENERAL RICHARD MONTGOMERY, by John Armstrong, Esq.

THE SACRED PHILOSOPHY OF THE SEASONS, illustrating The Perfections of God in the Phenomena of the Year. In 4 vols. By the Rev. HENRY DUNCAN, D. D., of *Ruthwell, Scotland;* with important additions, and some modifications to adapt it to American readers, by the Rev. F. W. P. GREENWOOD, of Boston.

The great value and interesting nature of these volumes, to every class of individuals, will be seen, at once, by a perusal of the following Table of Contents. The work contains a paper for every day in the year.

VOL. I.—WINTER.

I. SUNDAY.—*Goodness of God to his Rational Creatures.* The Character impressed on Nature—Compensation. Contrivance.

COSMICAL ARRANGEMENTS.

Globular Figure of the Earth. Circulation in the Atmosphere and Ocean. The Atmosphere. Ignis Fatuus. II. SUNDAY.—*General Aspect of Winter.* Phosphorescence. Aurora Borealis. Meteoric Showers. Variety of Climates. Practical Effect of the Commercial Spirit produced by a Variety of Climates. Adaptation of Organized Existences to Seasons and Climates. III. SUNDAY.—*The Omnipresence of God.* Adaptation of Organized Existences to the Tropical Regions. Adaptation of Organized Existences to Temperate and Polar Climates. The Balance Preserved in the Animal and Vegetable Creation. Night.—Its Alternation with Day. Sleep. Dreaming. IV. SUNDAY.—*The World a State of Discipline.*

THE STARRY HEAVENS.

General Remarks. Gravitation and Inertia. The Planetary System. The Sun as the Source of Light and Heat. Motions of the Planets. Resisting Medium. V. SUNDAY.—*Divine and Human Knowledge compared.* The Satellites. Relative Proportions of the Planetary System. Distance of the Fixed Stars. Immensity of the Universe. Nebulæ. Binary Stars.

THE MICROSCOPE.

VI. SUNDAY.—*Discoveries of the Telescope and Microscope compared.* Wonders of the Microscope.—Infusory Animalcules.

HYBERNATION OF PLANTS.

Plants and Animals compared. Adjustment of the Constitution of Plants to the Annual Cycle. Physiological Condition of Plants during Winter.

HYBERNATION OF INSECTS.

Instinct. VII. SUNDAY.—*On Seeing God in his Works.* Reason in the Lower Animals. Eggs. Various States. Bees. The Snail. The Beetle. VIII. SUNDAY.—*Greatness of God even in the Smallest Things.*

MIGRATIONS OF BIRDS AND QUADRUPEDS DURING WINTER.

Birds. Birds which partially migrate. Quadrupeds.

CHRISTMAS-DAY. NO SEASON UNPLEASANT TO THE CHEERFUL MIND. IX. SUNDAY.—*Proofs of Divine Benevolence in the Works of Creation.*

MIGRATION OF FISHES.

The Sturgeon, the Herring, the Cod, &c. Cetaceous Animals. Migration from the Sea into Rivers. Migration of Eels.

New-Year's-Day.

Migration of the Land-Crab. x. Sunday.—*Winter an Emblem of Death.*

HYBERNATION OF QUADRUPEDS.

Clothing. Storing Instincts. Torpidity.

HYBERNATION OF MAN.

Privation stimulates his Faculties. Provisions for his Comfort. Adaptation of his Constitution to the Season. xi. Sunday.—*The Unceasing and Universal Providence of God.*

INHABITANTS OF THE POLAR REGIONS.

The Esquimaux. Food and Clothing. Dwellings and Fire.

FROST.

Provision for causing Ice to Float on the Surface. The Expansive and Non-conducting Power of Ice. Amusements connected with it. xii. Sunday.—*Winter not Monotonous.—Boundless Variety of Nature.* ,Effects of Frost in the Northern Regions. Agency of Frost in Mountainous Regions. Hoar Frost.—Foliations on Window-Glass, &c. Beneficent Contrivances relative to Snow. Sagacity and Fidelity of the Dog in Snow.

GEOLOGY.

Its Phenomena consistent with the Mosaic Account of the Creation. xiii. Sunday.—*The Difficulty of Comprehending the Operations of Providence.* Successive Periods of Deposit. Successive Periods of Organized Existences. State of the Antediluvian World. Indications of the Action of the Deluge at the Period assigned to it in Scripture. Cuvier's Calculation respecting the Deluge. Effects of the Deluge on the Present Surface of the Earth. xiv. Sunday.—*The Deluge a Divine Judgement.*

VOL. II.—SPRING.

COSMICAL ARRANGEMENTS.

General Character of Spring in temperate Climates. Increasing Temperature of the Weather, and its Effects. Color and Figure of Bodies. Mountains. Rain. Springs. i. Sunday.—*Advantages of Vicissitude.* Rivers.

REPRODUCTION OF VEGETABLES.

Vegetable Soil. Vegetation. Preservation and Distribution of Seeds. Long Vitality of Seeds. Developement of Seeds and Plants. ii. Sunday.—*Analogy of Nature.* The Vital Powers of Plants. Flowers.—Their Form, Color, and Fragrance. Their Organs of Reproduction, and their Secretion of Honey. The Violet.

REPRODUCTION OF ANIMALS.

The Animal Structure.—Cellular Texture—Membranes, Tendons, and Ligaments. Secretion, Digestion, and the Circulation of the Blood. iii. Sunday.—"*The Same Lord over All.*" The Animal Structure. Gastric Juice. Muscular Power. Nature of the Proof of Creative Wisdom derived from the Animal Frame. The Lower Orders of Animals. The Higher Orders of Animals.

INSTINCTS CONNECTED WITH THE REPRODUCTION OF ANIMALS.

General Remarks. Parental Affection. Insects.—Their Eggs. iv. Sunday.—*On the Uniformity or Sameness in the Natural and Moral World.* Insects.—Care of their Offspring, exemplified in Bees and Wasps. The Moth. The Burying-Beetle. The Ant. Gall Flies. Deposition of Eggs in the Bodies of Animals, and in Insects' Nests. Birds.—Their Eggs. Prospective Contrivances. v. Sunday.—*On the Domestic Affections.* Birds.—Relation of their Bodies to external Nature. Pairing. Nest-building. The Grossbeak. The Humming-bird. vi. Sunday.—*Regeneration.* Birds.—Nests of Swallows. Hatching of Eggs, and rearing the Brood. Quadrupeds.—The Lion. The Rabbit. Instincts of the Young.

Man.—Effects of protracted Childhood on the Individual. Effects of protracted Childhood on the Parents and on Society. vii. Sunday.—*On Christian Love.*

AGRICULTURE.

The Difference between the Operations of Reason and Instinct, as affording Arguments in Favor of the Divine Perfections. Origin of Agricultural Labor. Origin of Property in the Soil, and the Division of Ranks. Effects of Property in the Soil. Benefits derived from the Principles which Stimulate Agricultural Improvement. The Blessings of Labor. viii. Sunday.—*Spiritual Training by Affliction.* Nature of Soils. Formation of Soils. Management of Soils.—Draining. Irrigation. Blair-Drummond Moss. Products of the Soil.—Dissemination of Plants. ix. Sunday.—*The Sower.* Dissemination of Plants.—The Cocoa-Nut Tree. Mitigation of Seasons occasioned by Cultivation. The Labors of the Husbandman wisely distributed over the Year. The Corn Plants.—Their Mysterious Origin. Their Distribution over the Globe. Wheat. x. Sunday.—*Sabbath Morning.* The Corn-Plants.—Barley, Oats, Rice, Maize, and Millet. Leguminous Plants.—Peas and Beans. Esculent Roots.—The Potato. Vegetable Substances used for Weaving. The Flax Plant. xi. Sunday.—*True Science the Handmaid of Religion.* Vegetable Substances used for Weaving. The Cotton Plant. Vegetable Substances used for Cordage.—Hemp. Vegetable Substances used for Paper.

ANNIVERSARY OF THE DEATH AND RESURRECTION OF CHRIST.

The Sacrament of the Supper. The Crucifixion. The Grave. xii. Sunday.—*The Resurrection.*

ENJOYMENT EQUALLY DISTRIBUTED. THE ENJOYMENTS OF THE POOR IN SPRING. THE WOODS.

RETROSPECTIVE VIEW OF THE ARGUMENT.

The Power and Intelligence of the Creator. The Goodness of the Creator. The Use and Deficiency of Natural Religion.

VOL. III.—SUMMER.

COSMICAL ARRANGEMENTS.

i. Sunday.—*Summer the Perfection of the Year.* Increased Heat. Internal Heat of the Earth. Increased Light. Electricity. Clouds. Dew. ii. Sunday.—*Scriptural Allusions to the Dew.* Adaptations of the Faculties of Living Beings to the Properties of Light and Air.

VEGETABLES.

Growth of Vegetables. Principles on which Horticulture is founded. History of Horticulture. The Turnip. Brassica or Cabbage. iii. Sunday.—*Spiritual Light.* Various Garden Vegetables. Flowers—The Rose. Fruits. Ingrafting. The Gooseberry and Currant. The Orchard. iv. Sunday.—*Spiritual Soil.* Productions of Warm Climates used for Human Food.—The Banana. The Date Palm. Trees used for other Purposes than Food. Vegetable Substances used in Tanning. Vegetable Fixed Oils. Vegetable Oils—Essential and Empyreumatic. Vegetable Tallow and Wax. v. Sunday.—*Spiritual Culture.* Vegetable Life in the Polar Regions.

ANIMALS.

Connexion between the Vegetable and Animal Kingdoms. The Sensorial Organs. Sensation and Perception. The Argonaut and Nautilus. The Coral Insect. vi. Sunday.—*The Invisible Architect.* Insect Transformations—Cocoons—The Silk-Worm. Insects—Their Larva State. Their Pupa or Chrysalis State. Their Imago or Perfect State. The Building Spider. Spider's Webb. vii. Sunday.—*Spiritual Transformation.* Insects—Legionary and Sanguine Ants. The Lion Ant—The Queen-Bee. Physiological Character of Vertebrated Animals. Reptiles—The Tortoise—The Serpent. viii. Sunday.—*The Old Serpent.* Reptiles—The Saurian Tribes. Birds—Their Relative Position. The Bill. Their Power of Flying. Their Power of Vision. Their Voice. Their Selection of Food. ix. Sunday.—*The Ascension of Christ.* Birds—Their Gregarious Habits. Domestic Fowls—The Cock, the Turkey, and the Peacock. The Goose and the Duck. Birds of Prey—The Vulture. The Eagle. Predaceous Animals—Their

Offices in Nature. X. SUNDAY.—*Christ the Judge of the World.* Quadrupeds—Their Characteristics. Their Bodily Organs. The Bat. The Mouse. Ruminating—The Goat and Sheep. Sheep Shearing. XI. SUNDAY.—*Christ, the Good Shepherd.* Quadrupeds—The Shepherd's Dog. Ruminating—The Cow. Thick-skinned—The Hog. The Horse and Ass. The Elephant. Reflections on the Domestic Animals. XII. SUNDAY.—*The Destruction of the World, and the Renovation of the Human Frame in a Future State.* Fishes. Man—His External Structure. His Intellectual Powers. His Moral Powers. Physical Effects of Climate. Moral Effects of Climate. XIII. SUNDAY.—*The Confusion of Tongues.* Man—Human Language.

HAYMAKING—PLEASURES OF RURAL SCENERY.

THE VARIETY, BEAUTY, AND UTILITY OF ORGANIZED EXISTENCES.

RETROSPECTIVE VIEW OF THE ARGUMENT.

Adaptation. Future Existence. Discipline.
XIV. SUNDAY.—*The Day of Pentecost—One Language.*

VOL. IV.—AUTUMN.

PHENOMENA, PRODUCE, AND LABORS OF THE SEASON.

General Character of Autumn. Autumn in the City. Famine in the beginning of Autumn. Autumnal Vegetation. Progress of Vegetation in the Corn Plants. Harvest. I. SUNDAY. *Stability of Nature.* Gleaning. The Harvest Moon. Harvest-Home. Storing of Corn. Birds.—Their State in Autumn.

THE WOODS.

Their Autumnal Appearance. II. SUNDAY.—*The Powers of the World to come.* The Woods. Their Uses. Various Kinds and Adaptations of Timber.

ORIGIN OF THE ARTS.—Food, Clothing, and Shelter.

HUMAN FOOD.

Its Principle. The Moral Operation of the Principle. Its Supply not inadequate. III. SUNDAY.—*Christians* "*Members one of another.*" Provision for the future.—Soil still uncultivated. Improved Cultivation. Means now in Existence. Vegetable and Animal Food. Fruits—Their Qualities. Drink. IV. SUNDAY.—"*The Bread of Life.*" Milk. Wine. Tea and Coffee. Sugar. The Pleasures connected with Food. Comparison between the Food of Savage and Civilized Man. V. SUNDAY.—"*Give us this Day our daily Bread.*" Agriculture of the Greeks.—Their Harvest. Agriculture of the Romans. Their Harvest. Progress of British Agriculture. Modern Continental Agriculture.

HUMAN CLOTHING.

Its Principle. Its Primitive State. VI. SUNDAY.—*The Emptiness of Human Attainments.* Its Ancient History. Commercial History of the Raw Material. The Silk Manufacture.—Its Modern History. History of Mechanical Contrivances connected with it. Rearing of the Cocoons, &c. The Cotton Manufacture.—Its Foreign History. VII. SUNDAY.—*The Intellectual and Moral Enjoyments of Heaven.* The Cotton Manufacture.—Its British History. Improvement of Machinery. Its American History.—Introduction of Steam Power. The Woollen Manufacture.—Its History. The Art of Bleaching. The Art of Dyeing.—Its Origin and Ancient History. VIII. SUNDAY.—*The Social and Religious Enjoyments of Heaven.* The Art of Dyeing.—Its Modern History. Its Chemical Principles.

ARCHITECTURE.

Its Principle. Its original State.—Materials employed. Tools employed. Its Modifications by the Influence of Habit and Religion. IX. SUNDAY.—*The Children of the World wiser than the Children of Light.* Architecture.—Ancient History and Practice.—Egypt.—Thebes. The Pyramids. India.—Excavated Temples. Central Asia.—Tower of Babel, or Temple of Belus. Babylon. Nineveh. Petra. Greece. X. SUNDAY.—*Divine Strength made perfect in Human Weakness.* Rome. The Gothic Style. Britain. Bridges. Aqueducts. Railways. XI. SUNDAY.—*An Autumnal Sabbath Evening.* Prospective Improvement of Locomotive Power. Lighthouses—The Eddystone Lighthouse. The Thames Tunnel.

CLOSE OF AUTUMN.

Miscellaneous Reflections on Autumnal Appearances. The Landscape at the Close of Autumn. XII. SUNDAY.—*The Fall of the Leaf.*

GENERAL SUMMARY OF THE ARGUMENT.

Government of the World by General Laws. Government of the World by a Particular Providence. Contrast between Savage and Civilized Life, as regards the Arts. As regards Domestic Comforts. As regards Commerce. As regards Moral Cultivation. XIII. SUNDAY.—"*The Harvest is the End of the World.*"

The preceding ten volumes are now ready for delivery;—and they will be followed, with all due despatch, by the subjoined, among others, provided they are approved by the Board of Education.

LIFE OF WASHINGTON, (with a portrait, and numerous engravings,) by the Rev. CHARLES W. UPHAM, *Author of 'the Life of Sir Henry Vane.'*

THE PURSUIT OF KNOWLEDGE UNDER DIFFICULTIES; in two volumes, with Preface and Notes, by FRANCIS WAYLAND, D. D., *President of Brown University.*

THE PURSUIT OF KNOWLEDGE UNDER DIFFICULTIES, illustrated by incidents in the Lives of AMERICAN INDIVIDUALS; in one volume, with Portraits.

HUMAN PHYSIOLOGY, in two volumes, with illustrative wood cuts, by ROBLEY DUNGLISON, M. D., *Professor of the Institutes of Medicine in the Jefferson Medical College, Philadelphia; Author of 'Elements of Hygiene,' 'The Medical Student,' 'Principles of Medical Practice,' &c. &c.*

CHEMISTRY, with illustrative wood cuts, by BENJAMIN SILLIMAN, M. D., L.L. D., *Professor of Chemistry, Mineralogy, &c. in Yale College.*

ASTRONOMY, by DENNISON OLMSTED, *Professor of Natural Philosophy and Astronomy in Yale College.*

This work will be a popular treatise on the Science; it will also enter fully into its history, and consider the subject of Natural Theology, so far as it is related to Astronomy.

NATURAL PHILOSOPHY, by PROFESSOR OLMSTED.

Both of these works will be very fully illustrated by diagrams and wood engravings.

THE USEFUL ARTS, considered in connexion with the Applications of Science; in two volumes, with many cuts, by JACOB BIGELOW, M. D., *Professor of Materia Medica in Harvard University, Author of 'the Elements of Technology,' &c. &c.*

We subjoin a summary of the Topics discussed in the several chapters of this Important Work, that its nature and objects may be the more clearly understood.

CHAPTER I.

Outline of the History of the Arts in Ancient and Modern Times.

Arts of the Egyptians, Assyrians, Jews, Hindoos, Chinese, Greeks, Romans, Dark Ages, Modern Times, Nineteenth Century.

CHAPTER II.

Of the Materials used in the Arts.

Materials from the Mineral Kingdom—Stones and Earths—Marble, Granite, Sienite, Freestone, Slate, Soapstone, Serpentine, Gypsum, Alabaster, Chalk, Fluor Spar, Flint, Porphyry, Buhrstone, Novaculite, Precious Stones, Emery, Lead, Pumice, Tufa, Peperino, Tripoli, Clay, Asbestus, Cements, Limestone, Puzzolana, Tarras. *Other Cements*—Maltha. *Metals*—Iron, Copper, Lead, Tin, Mercury, Gold, Silver, Platina, Zinc, Antimony, Bismuth, Arsenic, Manganese, Nickel. *Combustibles*, &c—Bitumen, Amber, Coal, Anthracite, Graphite, Peat, Sulphur. *Materials from the Vegetable Kingdom*—Wood, Bark, Oak, Hickory, Ash, Elm, Locust, Wild Cherry, Chestnut, Beech, Basswood, Tulip Tree, Maple, Birch, Button Wood, Persimmon, Black Walnut, Tupelo, Pine, Spruce, Hemlock, White Cedar, Cypress, Larch, Arbor Vitæ, Red Cedar, Willow, Mahogany, Boxwood, Lignum Vitæ, Cork, Hemp, Flax, Cotton, Turpentine, Caoutchouc, Oils, Resins, Starch, Gum. *Materials from the Animal Kingdom*—Skins, Hair, and Fur, Quills and Feathers, Wool, Silk, Bone and Ivory, Horn, Tortoise Shell, Whale Bone, Glue, Oil, Wax, Phosphorus. *Materials used in Painting, Dyeing, and Varnishing.*

CHAPTER III.

Of the Form and Strength of Materials.

Modes of Estimation, Stress and Strain, Resistance, Extension, Compression, Lateral Strain, Stiffness, Tubes, Strength, Place of Strain, Incipient Fracture, Shape of Timber, Torsion, Limit of Bulk, Practical Remarks.

CHAPTER IV.

The Preservation of Materials.

Stones, Metals, Organic Substances, Temperature, Dryness, Wetness, Antiseptics. Timber—Felling, Seasoning. Preservation of Timber.—Preservation of Animal Texture—Embalming, Tanning, Parchment, Catgut, Gold Beater's Skin. Specimens in Natural History—Appert's Process.

CHAPTER V.

Of Dividing and Uniting Materials.

Cohesion. *Modes of Division*—Fracture, Cutting Machines, Penetration, Boring and Drilling, Turning, Attrition, Sawing, Saw Mill, Circular Saw, Crushing, Stamping Mill, Bark Mill, Oil Mill, Sugar Mill, Cider Mill, Grinding, Grist Mill, Color Mill. *Modes of Union*—Insertion, Interposition, Binding, Locking, Cementing, Glueing, Welding, Soldering, Casting, Fluxes, Moulds.

CHAPTER VI.

Of Changing the Color of Materials.

Of Applying Superficial Color—Painting, Colors, Preparation, Application, Crayons, Water Colors, Distemper, Fresco, Encaustic Painting, Oil Painting, Varnishing, Japanning, Polishing, Lacquering, Gilding. *Of Changing Intrinsic Color*—Bleaching, Photogenic Drawing, Dyeing, Mordants, Dyes, Calico Printing.

CHAPTER VII.

The Arts of Writing and Printing.

Letters. Invention of Letters, Arrangement of Letters, Writing Materials, Papyrus, Herculaneum, Manuscripts, Parchment, Paper, Instruments, Ink, Copying Machines, Printing, Types, Cases, Sizes, Composing, Imposing, Signatures, Correcting the Press, Press Work, Printing Press, Stereotyping, Machine Printing. History.

CHAPTER VIII.

Arts of Designing and Painting.

Divisions, Perspective, Field of Vision, Distance and Foreshortening, Definitions, Plate II—Problems, Instrumental, Perspective, Mechanical Perspective, Perspectographs, Projections, Isometrical Perspective, Chiaro Oscuro, Light and Shade, Association, Direction of Light, Reflected Light, Expression of Shape. Eyes of a Portrait—Shadows, Aerial Perspective, Coloring, Colors, Shades, Tone, Harmony, Contrast. Remarks.

CHAPTER IX.

Arts of Engraving and Lithography.

Engraving, Origin, Materials, Instruments, Styles, Line, Engraving, Medal Ruling, Stippling, Etching, Mezzo-tinto, Aqua Tinta, Copperplate Printing, Colored Engravings, Steel Engraving, Wood Engraving. Lithography—Principles, Origin, Lithographic Stones, Preparation, Lithographic Ink and Chalk, Mode of Drawing, Etching the Stone, Printing, Printing Ink. Remarks.

CHAPTER X.

Of Sculpture, Modelling, and Casting.

Subjects—Modelling, Casting in Plaster, Bronze Casting, Practice of Sculpture, Materials, Objects of Sculpture, Gem Engraving, Cameos, Intaglios, Mosaic, Scagliola.

CHAPTER XI.

Of Architecture and Building.

Architecture—Elements, Foundations, Column, Wall, Lintel, Arch, Abutments, Arcade, Vault, Dome, Plate I, Roof, Styles of Building, Definitions, Measures, Drawings, Restorations, *Egyptian Style*, *The Chinese Style*, *The Grecian Style*, Orders of Architecture—Doric Order, Ionic Order, Corinthian Order, Caryatides, Grecian Temple, Grecian Theatre, Remarks, Plate IV, *Roman Style*, Tuscan Order, Roman Doric, Roman Ionic, Composite Order, Roman Structures. Remarks, Plate V, *Greco-Gothic Style*, *Saracenic Style*, *Gothic Style*, Definitions, Plate VI, Plate VII, Application.

CHAPTER XII.

Arts of Heating and Ventilation.

Production of Heat—Fuel, Weight of Fuel, Combustible Matter of Fuel, Water in Fuel, Charcoal, *Communication of Heat*, Radiated and Conducted Heat, Fire in the Open Air, Fire Places, Admission of Cold Air, Open Fires, Franklin Stove, Rumford Fire Place, Double Fire Place, Coal Grate, Anthracite Grate, Burns' Grate, Building a Fire, Furnaces, Stoves, Russian Stove, Cockle, Cellar Stoves, and Air Flues, Heating by Water, Heating by Steam, *Retention of Heat*, Causes of Loss, Crevices, Chimneys, Entries and Sky Lights, Windows, *Ventilation*, Objects, Modes, Ventilators, Culverts, Smoky Rooms, Damp Chimneys, Large Fire

Places, Close Rooms, Contiguous Doors, Short Chimneys, Opposite Fire Places, Neighboring Eminences, Turncap, &c., Contiguous Flues, Burning of Smoke.

CHAPTER XIII.

Arts of Illumination.

Flame—Support of Flame, Torches and Candles, Lamps, Reservoirs, Astral Lamp, Hydrostatic Lamps, Automaton Lamp, Mechanical Lamps, Fountain Lamp, Argand Lamp, Reflectors, Hanging of Pictures, Transparency of Flame, Glass Shades, Sinumbral Lamp, Measurement of Light, Gas Lights, Coal Gas, Oil Gas, Gasometer, Portable Gas Lights, Safety Lamp, Lamp without Flame, Modes of procuring Light.

CHAPTER XIV.

Arts of Locomotion.

Motion of Animals, Inertia, Aids to Locomotion, Wheel Cariages. Wheels, Rollers, Size of Wheels, Line of Traction, Broad Wheels, Form of Wheels, Axletrees, Springs, Attaching of Horses, Highways, Roads, Pavements, McAdam Roads, *Bridges*, 1, Wooden Bridges, 2, Stone Bridges, 3, Cast Iron Bridges, 4, Suspension Bridges, 5, Floating Bridges, *Rail Roads*, Edge Railway, Tram Road, Single Rail, Passings, Propelling Power, Locomotive Engines, *Canals*, Embankments, Aqueducts, Tunnels, Gates and Weirs, Locks, Boats, Size of Canals, *Sailing*, Form of a Ship, Keel and Rudder, Effect of the Wind, Stability of a Ship, Steam Boats, *Diving Bell*, Submarine Navigation, *Aerostation*, Balloon, Parachute.

CHAPTER XV.

Elements of Machinery.

Machines, Motion, *Rotary or Circular Motion*, Band Wheels, Rag Wheels, Toothed Wheels, Spiral Gear, Bevel Gear, Crown Wheel, Universal Joint, Perpetual Screw, Brush Wheels, Ratchet Wheel, Distant Rotary Motion, Change of Velocity, Fusee, *Alternate or Reciprocating Motion*, Cams, Crank, Parallel Motion, Sun and Planet Wheel, Inclined Wheel, Epicycloidal Wheel, Rack and Segment, Rack and Pinion, Belt and Segment, Scapements, *Continued Rectilinear Motion*, Band, Rack, Universal Lever, Screw, Change of Direction, Toggle Joint, *Of Engaging and Disengaging Machinery*, *Of Equalizing Motion*, Governor, Fly Wheel, *Friction*, Remarks.

CHAPTER XVI.

Of the Moving Forces used in the Arts.

Sources of Power, Vehicles of Power, *Animal Power*, Men, Horses, *Water Power*, Overshot Wheel, Chain Wheel, Undershot Wheel, Back Water, Besant's Wheel, Lambert's Wheel, Breast Wheel, Horizontal Wheel, Barker's Mill, Wind Power, Vertical Windmill, Adjustment of Sails, Horizontal Windmill, *Steam Power*, Steam, Applications of Steam, By Condensation, By Generation, By Expansion, The Steam Engine, Boiler Appendages, Engine, Noncondensing Engine, Condensing Engines, Description, Expansion, Engines, Valves, Pistons, Parallel Motion, Historical Remarks, Projected Improvements, Rotative Engines, Use of Steam at High Temperatures, Use of Vapors of Low Temperature, Gas Engines, Steam Carriages, Steam Gun, *Gunpowder*, Manufacture, Detonation, Force, Properties of a Gun, Blasting.

CHAPTER XVII.

Arts of Conveying Water.

Of Conducting Water—Aqueducts, Water Pipes, Friction of Pipes, Obstruction of Pipes, Syphon, *Of Raising Water*, Scoop Wheel, Persian Wheel, Noria, Rope Pump, Hydreole, Archimedes' Screw, Spiral Pump, Centrifugal Pump, Common Pumps, Forcing Pumps, Plunger Pump, Delahire's Pump, Hydrostatic Press, Lifting Pump, Bag Pump, Double Acting Pump, Rolling Pump, Eccentric Pump, Arrangement of Pipes, Chain Pump, Schemnitz Vessels, or Hungarian Machine, Hero's Fountain, Atmospheric Machines, Hydraulic Ram, *Of Projecting Water*. Fountains, Fire Engines, Throwing Wheel.

CHAPTER XVIII.

Arts of Combining Flexible Fibres.

Theory of Twisting, Rope Making, *Cotton Manufacture*, Elementary Inventions, Batting, Carding. Drawing, Roving, Spinning, Mule Spinning, Warping, Dressing, Weaving, Twilling, Double Weaving, Cross Weaving, Lace, Carpeting, Tapestry, Velvets, Linens, *Woolens*, *Felting*, *Paper Making*.

CHAPTER XIX.

Arts of Horology.

Sun Dial, Clepsydra, Water Clock, Clock Work, Maintaining Power, Regulating Movement, Pendulum, Balance, Scapement, Description of a Clock, Striking Part, Description of a Watch.

CHAPTER XX.

Arts of Metallurgy.

Extraction of Metals, Assaying, Alloys, *Gold*, Extraction, Cupellation, Parting, Cementation, Alloy, Working, Gold Beating, Gilding on Metals, Gold Wire, *Silver*, Extraction, Working, Coining, Plating, *Copper*, Extraction, Working, Brass, Manufacture, Buttons, Pins, Bronze, *Lead*, Extraction, Manufacture, Sheet Lead, Lead Pipes, Leaden Shot, *Tin*, Block Tin, Tin Plates, Silvering of Mirrors, *Iron*, Smelting, Crude Iron, Casting, Malleable Iron, Forging, Rolling and Slitting, Wire Drawing, Nail Making, Gun Making, Steel, Alloys of Steel, Case Hardening, Tempering, Cutlery.

CHAPTER XXI.

Arts of Vitrification.

Glass, Materials, Crown Glass, Fritting, Melting, Blowing, Annealing, Broad Glass, Flint Glass, Bottle Glass, Cylinder Glass, Plate Glass, Moulding, Pressing, Cutting, Stained Glass, Enamelling, Artificial Gems, Devitrification, Reaumur's Porcelain, Crystallo-Ceramie, Glass Thread, Remarks.

CHAPTER XXII.

Arts of Induration by Heat.

Bricks, Tiles, Terra Cotta, Crucibles, Pottery, Operations, Stone Ware, White Ware, Throwing, Pressing, Casting, Burning, Printing, Glazing, China Ware, European Porcelain, Etruscan Vases.

A FAMILIAR TREATISE ON THE CONSTITUTION OF THE UNITED STATES, by the Hon. Judge Story, L L. D., *Author of 'Commentaries on the Constitution,' &c.*

LIFE OF DR. FRANKLIN.

SELECTIONS FROM THE WRITINGS OF FRANKLIN, by Jared Sparks, L L. D., *Professor of History in Harvard University, Author of 'the Life and Writings of Washington,' 'the Life and Writings of Franklin,' &c. &c.*

CHRISTIANITY AND KNOWLEDGE, by the Rev. Royal Robbins.

The design of this Work is to show what Christianity has done for the human intellect, and what that has done for Christianity.

THE LORD OF THE SOIL, OR, PICTURES OF AGRICULTURAL LIFE ; by Rev. WARREN BURTON, *Author of 'The District School as it Was,' &c. &c.*

SCIENCE AND THE ARTS, by the Rev. ALONZO POTTER, D. D., *Professor of Moral Philosophy and Rhetoric, in Union College, Schenectady, N. Y.*

The design of this Work is to call attention to the fact that the Arts are the result of *intelligence*—that they have, each one its *principles* or *theory*—that these principles are furnished by *Science*, and that he, therefore, who would understand the Arts, must know something of Science ; while, on the other hand, he who would see the true power and worth of Science ought to study it in its applications. The work will be made up of *facts*, illustrating and enforcing these views—so arranged as to exhibit the invariable connexion between *processes* in *Art*, and *laws* in *Nature*. The importance of such a work requires no comment.

AGRICULTURE, by the Hon. JUDGE BUEL, of Albany, *Editor of 'the Cultivator.'*

This Work is intended as an aid to the *Young Farmer*, and from the known character of the gentleman who has it in hand, there can be no doubt but that it will be executed in a highly satisfactory manner. The following, among other subjects, will be therein treated of, viz.

1. The Importance of Agriculture to a Nation.
2. Improvement in our Agriculture practicable and necessary.
3. Some of the principles of the new and improved Husbandry.
4. Agriculture considered as an Employment.
5. Earths and Soils.
6. Improvement of the Soil.
7. Analogy between Animal and Vegetable Nutrition.
8. Further Improvement of the Soil.
9. " " by Manures, Animal and Vegetable.
10. " " by Mineral Manures.
11. Principles and Operations of Draining.
12. Principles of Tillage.
13. Operations of Tillage, &c. &c.

Due notice will also be taken of alternating crops, root husbandry, mixed husbandry, the management of pasture and meadow lands, the garden, orchard, &c.

Cuts, illustrative of the various operations spoken of and recommended, will be given.

GEOLOGY AND MINERALOGY, by CHARLES T. JACKSON, M. D., *Geological Surveyor of Maine and Rhode Island.*

STATISTICS OF THE UNITED STATES, by GEORGE TUCKER, *Professor of Moral Philosophy in the University of Virginia, Author of 'the Life of Jefferson,' &c. &c.*

AMERICAN TREES AND PLANTS, used for medicinal and economical purposes and employed in the Arts, with numerous engravings; by Professor JACOB BIGELOW, *Author of 'Plants of Boston,' 'Medical Botany,' &c. &c.*

MORAL EFFECTS OF INTERNAL IMPROVEMENTS, by ROBERT RANTOUL, Jr., Esq.

LIVES OF THE REFORMERS, by Rev. ROMEO ELTON, *Professor of Languages in Brown University.*

BIOGRAPHICAL SKETCHES OF DISTINGUISHED FEMALES, by Mrs. EMMA C. EMBURY, of *Brooklyn, N. Y.*

SKETCHES OF AMERICAN CHARACTER, by Mrs. SARAH J. HALE, *Editor of 'the Ladies' Book,' Author of the 'Ladies' Wreath,' 'Flora's Interpreter,' &c. &c.*

DO RIGHT AND HAVE RIGHT, by Mrs. ALMIRA H. LINCOLN PHELPS, *Principal of the Literary Department of the Young Ladies' Seminary, at West Chester, Pa., formerly of the Troy Seminary, N. Y., Author of 'Familiar Lectures on Botany,' 'Female Student,' &c.*

The object of this Work may be gathered from the following remarks of Mrs. Phelps. "A popular work on the principles of law, with stories illustrating these principles, might be very profitable to people in common life, as well as to children. The ward cheated by a guardian, the *widow* imposed on by administrators or executors, the *wife* abandoned by a husband, with whom she had trusted her paternal inheritance, the *partner* in business, overreached by his crafty associate, for want of a knowledge of the operations of the law,—all these might be exhibited in such a way as to teach the necessity of legal knowledge to both sexes, and to all ages and classes."

SCENES IN THE LIFE OF JOANNA OF SICILY, by Mrs. E. F. ELLET, *of Columbia, S. C.*

This is written with a view to young readers, and for the purpose of illustrating important historical events.

The Publishers have also in preparation for this Series, a History of the United States, and of other Countries, a History of the Aborigines of our Country, a History of Inventions, Works on Botany, Natural History, &c. &c. Many distinguished writers, not here mentioned, have been engaged, whose names will be in due time announced, although at present, we do not feel at liberty to make them public.

Among the works prepared, and in a state of forwardness, for the *Juvenile Series* are the following, viz.

MEANS AND ENDS, OR SELF TRAINING, by Miss Caroline Sedgwick, *Author of 'The Poor Rich Man, and Rich Poor Man,' 'Live and Let Live,' 'Home,' &c. &c.*

NEW-ENGLAND HISTORICAL SKETCHES, by N. Hawthorne, *Author of 'Twice Told Tales,' &c.*

CONVERSATIONS AND STORIES BY THE FIRE SIDE, by Mrs. Sarah J. Hale,

FAILURE NOT RUIN, by Horatio G. Hale, A. M.

TALES IN PROSE, blending instruction with amusement; by Miss Mary E. Lee, of *Charleston, S. C.*

PICTURES OF EARLY LIFE :—Stories; each inculcating some moral lesson; by Mrs. Emma C. Embury, of *Brooklyn, N. Y.*

FREDERICK HASKELL'S VOYAGE ROUND THE WORLD, by H. G. Hale, A. M., *Philologist to the Exploring Expedition.*

BIOGRAPHY FOR THE YOUNG, by Miss E. Robbins, *Author of 'American Popular Lessons,' Sequel to the same, &c.*

THE WONDERS OF NATURE, by A. J. Stansbury, Esq., of *Washington City ;* illustrated by numerous cuts.

WORKS OF ART, *by the same ;* illustrated by numerous cuts.

PLEASURES OF TASTE, and other Stories selected from the Writings of Jane Taylor, with a sketch of her life, (and a likeness,) by Mrs. S. J. Hale.

SELECTIONS FROM THE WORKS OF MRS. BARBAULD, *with a Life and Portrait.*

SELECTIONS FROM THE WORKS OF MARIA EDGEWORTH, *with a Life and Portrait.*

SELECTIONS FROM THE WORKS OF MRS. SHERWOOD, *with a Life and Portrait.*

SELECTIONS FROM THE WORKS OF DR. AIKIN, *with a Sketch of his Life, by* Mrs. Hale.

CHEMISTRY FOR BEGINNERS, by Benjamin Silliman, Jr., *Assistant in the Department of Chemistry, Mineralogy, and Geology in Yale College ;* aided by Professor Silliman.

MY SCHOOLS AND MY TEACHERS, by Mrs. A. H. Lincoln Phelps.

The author's design, in this work, is to describe the Common Schools as they were in New-England at the beginning of the present century; to delineate the peculiar characters of different Teachers; and to give a sketch of her various school companions, with their progress in after life, endeavoring thereby to show that the child, while at school, is forming the future man, or woman.

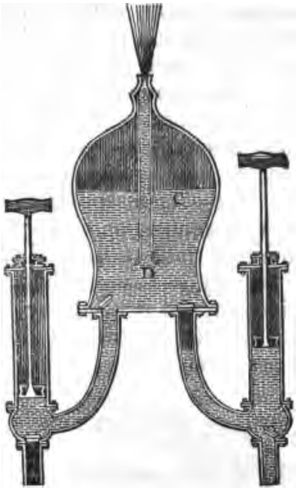
It is not the intention of the Publishers to drive these works through the Press with a railroad speed, in the hope of securing the market, by the multiplicity of the publications cast upon the community; they rely for patronage, upon the intrinsic merits of the works, and consequently time must be allowed the writers to mature and systematize them. The more surely to admit of this, the two Series will be issued in sets of five and ten volumes at a time. Besides the advantage above alluded to, that will result from such an arrangement, it will place The School Library within the reach of those Districts, which, from the limited amount of their annual funds, would not otherwise be enabled to procure it.

The works will be printed on paper and with type expressly manufactured for the Library; will be bound in cloth, with leather backs and corners, having gilt titles upon the backs, and for greater durability, cloth hinges inside of the covers.

The *larger Series* will be furnished to Schools, Academies, &c., at *seventy-five cents* per volume, and the *Juvenile Series* at *forty cents* per volume; which the Publishers advisedly declare to be cheaper, than any other series of works that can be procured at home or abroad, bearing in mind their high intellectual character, and the style of their mechanical execution.

The Publishers solicit orders from School Committees, Trustees, Teachers, and others, for either or both Series, and wish particular directions *how*, to *whom*, and *to what place* the books shall be forwarded.

Annexed are Specimen Pages of the two Series.

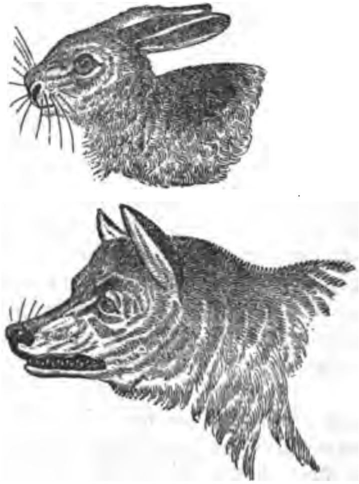


carried into the reservoir, and they fill it half full of water, C; the mouth of the pipe, D, which is to convey away the water, reaches into the water in the reservoir. As the water rises, the air is compressed: so that, although the pumps act alternately, the elasticity of the contained air acts uninterruptedly in pressing on the surface of the water, and raising it by the tube, D, in an equable stream. The elasticity of the contained air, fills up the interval between the actions of the pumps, and admits of no interruption to the force with which the water is propelled upwards.

Surely these are sufficient indications of the necessity of three powers acting in propelling the blood from the heart. The first, is a sudden and powerful action of the ventricle: the second, is a contraction of the artery, somewhat similar, excited by its distention: the third, though a property independent of life, is a power permitting no interval or alternation; it is the elasticity of the coats of the artery: and these three powers, duly adjusted, keep up a continued stream in the blood-vessels. It is true, that when an artery is wounded, the blood flows

The superior sagacity of animals which hunt their prey, and which, consequently, depend for their livelihood upon their *nose*, is well known in its use; but not at all known in the organization which produces it.

The external *ears* of beasts of prey, of lions, tigers, wolves, have their trumpet-part, or concavity, standing forward, to seize the sounds which are before them—viz., the sounds of the animals which they pursue or watch. The ears of animals of flight are turned backward, to give notice of the approach of their enemy from behind, whence he may steal upon them unseen. This is a critical distinction, and is mechanical; but it may be suggested, and, I think, not without probability, that it is the effect of continual habit.



[Heads of the hare and wolf, showing the different manner in which the ears are turned.—AM. ED.]

The *eyes* of animals which follow their prey by night, as cats, owls, &c., possess a faculty not given to those of other species, namely, of closing the pupil *entirely*.

It is difficult even for the imagination to conceive the feelings of such a man, at the moment of so sublime a discovery. What a bewildering crowd of conjectures must have thronged upon his mind, as to the land which lay before him, covered with darkness. That it was fruitful was evident from the vegetables which floated from its shores. He thought, too, that he perceived in the balmy air the fragrance of aromatic groves. The moving light which he had beheld, proved that it was the residence of man. But what were its inhabitants? Were they like those of other parts of the globe; or were they some strange and monstrous race, such as the imagination in those times was prone to give to all remote and unknown regions? Had he come upon some wild island, far in the Indian seas; or was this the famed Cipango itself, the object of his golden fancies? A thousand speculations of the kind must have swarmed upon him, as he watched for the night to pass away; wondering whether the morning light would reveal a savage wilderness, or dawn upon spicy groves, and glittering fanes, and gilded cities, and all the splendors of oriental civilization.

CHAPTER XI.

First Landing of Columbus in the New World.—Cruise among the Bahama Islands.—Discovery of Cuba and Hispaniola. [1492.]

When the day dawned, Columbus saw before him a level and beautiful island, several leagues in extent, of great freshness and verdure, and covered with trees like a continual orchard. Though every thing appeared in the wild luxuriance of untamed nature, yet the island was evidently populous, for the inhabitants were seen issuing from the woods, and running from all parts to the shore. They were all perfectly naked, and from their attitudes residence of Martin Alonzo or Vicente Yañez Pinzon, in the time of Columbus.

We now arrived at the church of St. George, in the porch of which Columbus first proclaimed to the inhabitants of Palos the order of the sovereigns, that they should furnish him with ships for his great voyage of discovery. This edifice has lately been thoroughly repaired, and, being of solid mason-work, promises to stand for ages, a monument of the discoverers. It stands outside of the village, on the brow of a hill, looking along a little valley toward the river. The remains of a Moorish arch prove it to have been a mosque in former times; just above it, on the crest of the hill, is the ruin of a Moorish castle.

I paused in the porch, and endeavored to recall the interesting scene that had taken place there, when Columbus, accompanied by the zealous friar Juan Perez, caused the public notary to read the royal order in presence of the astonished alcaldes, regidors, and alguazils; but it is difficult to conceive the consternation that must have been struck into so remote a little community, by this sudden apparition of an entire stranger among them, bearing a command that they should put their persons and ships at his disposal, and sail with him away into the unknown wilderness of the ocean.

The interior of the church has nothing remarkable, work of creation and the work of grace revealed in the word of God. Proofs corroborative of the authenticity of the Bible, have been gathered from those very sources which formerly were applied to by the skeptic for his sharpest weapons; and at this moment, (such is the security with which Christianity may regard the progress of knowledge,) there does not exist in our own country, nor, so far as I am aware, in any other, one philosopher of eminence who has ventured to confront Christianity and philosophy, as manifestly contradictory. May we not venture to hope that, in a very short time, the weak darts of minor spirits, which from time to time are still permitted to assail our bulwarks, will be also quenched, and the glorious Gospel, set free from all the oppositions of science falsely so called, shall walk hand in hand over the earth with a philosophy always growing in humility, because every day becoming more genuine. C. J. C. D.

TWELFTH WEEK—MONDAY.

VEGETABLE SUBSTANCES USED FOR WEAVING.—THE COTTON-PLANT.

The cotton-plant, another vegetable substance, extensively used in manufactures, differs materially from that already described, in its properties, appearance, and habits. Instead of being generally diffused over temperate climates, it belongs more properly to the torrid zone, and the regions bordering on it; and instead of being chiefly confined to one species, as to its peculiar and useful qualities, its varieties seem scarcely to have any limit, extending from an herb* of a foot or two in height, to a tree†

---

* Gossypium herbaceum, or common herbaceous cotton-plant.

† Bombax ceiba, or American silk cotton-tree.—[The Baobab, or *Adansonia digitata*, an enormous and long-lived tree, also belongs to this family. But it is incorrect to call these trees "varieties" of the cotton plant. They are nearly allied to it, indeed, but they stand in different divisions of the great order of *malvaceæ*, or mallows; and the downy contents of their pods are of little use compared with true cotton. —Am. Ed.]

Coup de main, (French term,) a military expression, denoting an instantaneous, sudden, unexpected attack upon an enemy.

Dulce et decorum est pro patria mori, It is delightful and glorious to die for one's country.

Effigies Seb. Caboti Angli filii Joannis Caboti militis aurati. As will be seen by the text, where this inscription occurs, (p. 121,) there is an ambiguity in the application of the last two words. The other part of the inscription, may be rendered, "the portrait (or likeness) of Sebastian Cabot, of England, son of John Cabot." *Miles*, or *militis*, means, literally, a warrior, or soldier, or officer of the army; and in the English law, sometimes indicates a knight. *Auratus*, or *aurati*, means gilt, gilded, or decked with gold. *Eques* means a horseman, or knight, who was frequently called *eques auratus*, because, anciently, none but knights were allowed to beautify their armor, and other habiliments, with gold.

En masse, in a body, in the mass, altogether.

Eques, and *Eques auratus*. See *Effigies*.

Fascine, (pl. *fascines*,) a bundle of fagots, or small branches of trees, or sticks of wood, bound together, for filling ditches, &c.

Formula, (pl. *formulæ*,) a prescribed form or order.

Geodætic, relating to the art of measuring surfaces.

Gramina, grasses.

Green Mountain Boys, a term applied, during the Revolutionary War, to the inhabitants of Vermont, (Green Mountain,) particularly those who were in the army.

Gymnotus, the electric eel.

Habeas Corpus, "you may have the body." A writ, as it has been aptly termed, of personal freedom; which secures, to any individual, who may be imprisoned, the privilege of having his cause immediately removed to the highest court, that the judges may decide whether there is ground for his imprisonment or not.

Hipparchus, a celebrated mathematician and astronomer of Nicæa, in Bithynia, who died 125 years before the Christian era. He was the first after Thales and Sulpicius Gallus, who found out the exact time of eclipses, of which he made a calculation for 600 years. He is supposed to have been the first, who reduced astronomy to a science, and prosecuted the study of it systematically.

Loyalists, Royalists, Refugees, and Tories. In the times of the Revolution, these terms were used as technical or party names, and were sometimes applied indiscriminately. Strictly speaking, however, *Loyalists*, were those whose feelings or opinions were in favor of the mother country, but who declined taking part in the Revolution; *Royalists*, were those who preferred or favored, a kingly government; *Refugees*, were those who fled from the country and sought the protection of the British; and *Tories*, were those, who actually opposed the war, and took part with the enemy, aiding them by all the means in their power.

Magnetic Variation, a deviation of the needle in the mariner's compass, from an exact North and South direction.

Master-at-arms, an officer appointed to take charge of the small arms in a ship of war, and to teach the officers and crew the exercise of

18mo. pages.

ring it all the time. Of course I do not make it every time it is wanted, for sometimes, when I want it extra good, I boil and stir it a full hour, and then I put it away in a close vessel and in a cool place. For Raymond, or for any one getting well, and free from fever, I put in a third wheat flour, and half milk. You see it is a very simple process, sir."

"Yes—simple enough. But it is to these simple processes that people will not give their attention."

Mary had the happiness of seeing Raymond sitting up before their parents returned, and when they drove into the great gate, and up the lane, he was in his rocking-chair by the window, watching for them. They had heard of his illness, and were most thankful to find him so far recovered. The Doctor chanced to be present when they arrived. "O, Doctor!" said Mrs. Bond, after the first greetings were over, "how shall I ever be grateful enough to you?"

"I have done very little, Mrs. Bond," replied the honest Doctor. "In Raymond's case, medicine could do little or nothing. Nature had been overtasked, and wanted rest and soothing. Under God, Raymond owes his recovery to Mary."

"O, mother!" exclaimed Raymond, bursting into tears, "she is the best sister in the world!"

"She is the best sister in the *two* worlds!" cried little Grace Bond, a child of five years old.

A source of true comfort and happiness is such a child and such a sister as Mary Bond!—a light us, as soon as we are missed; let us keep on and perhaps we may find some other path."

The poor children proceeded on their course, unconscious that every step was taking them deeper into the forest, until, completely bewildered by the thick darkness, and overcome with fatigue, they could go no further. "Let us pray to God, and then we can lie down, and die in peace," said George; and the innocent children knelt down on the fallen leaves, and lisped their simple prayers, as they were accustomed to do at their mother's side.

"We must try to find some shelter, George," said Kate, as they arose from their knees, "this chill air will kill you, even if we escape the wild beasts." As she spoke, the light of a young moon which faintly illumined the depths of the wood, enabled her to discover a hollow log lying near. Tearing off some branches from the brittle hemlock tree, she piled them around the log, in such a manner, as to form a sort of penthouse; and, placing George within the more effectual shelter of the log, she lay down by his side. Worn with fatigue, notwithstanding their fears, the children soon fell into a profound sleep; and the beams of the morning sun, shining through the branches which formed their covering, first awoke them from their peaceful slumbers.

Their little hearts swelled with gratitude to the merciful God, who had preserved them through the perils of the night, and the morning hymn which was wont to resound within the walls of their